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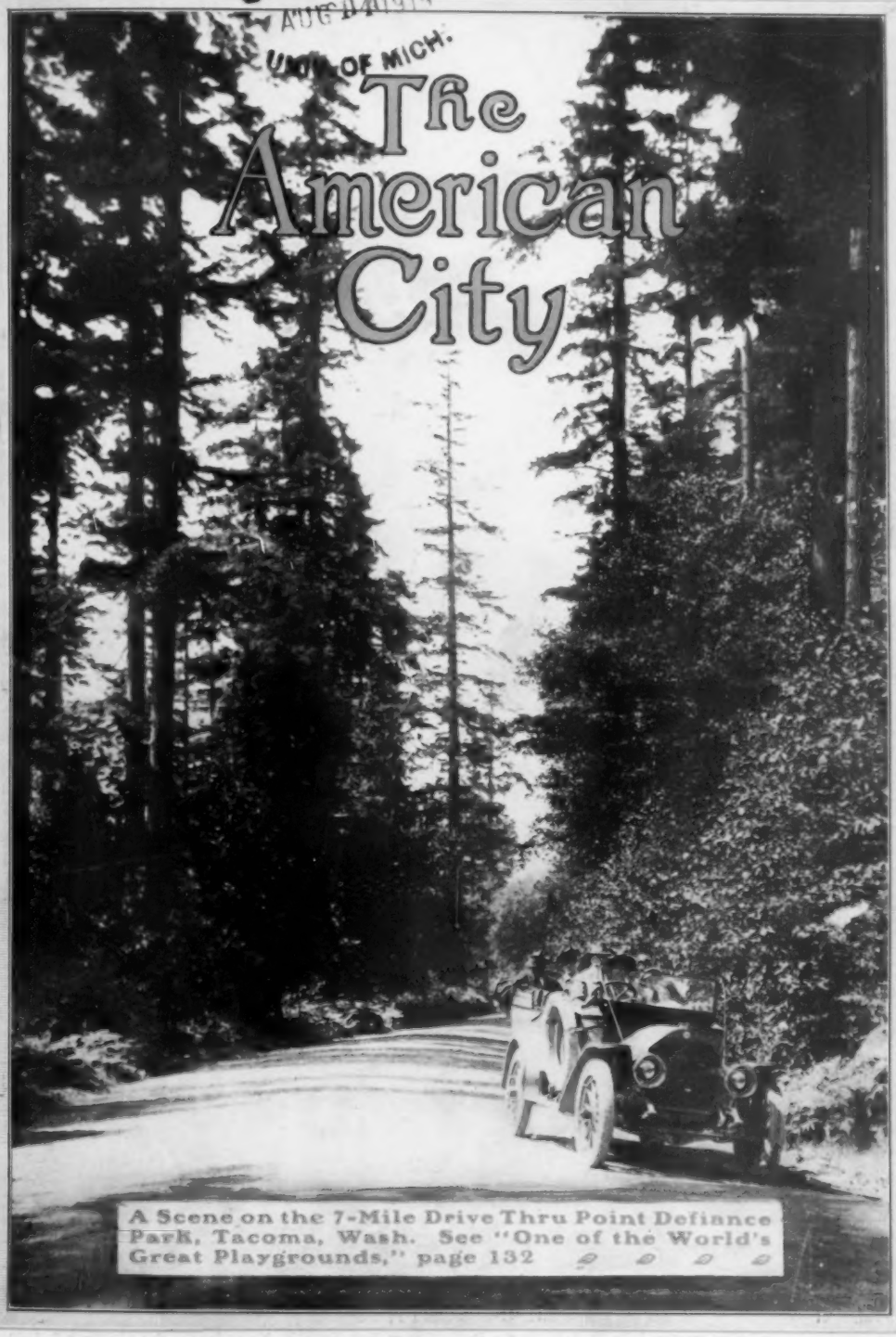
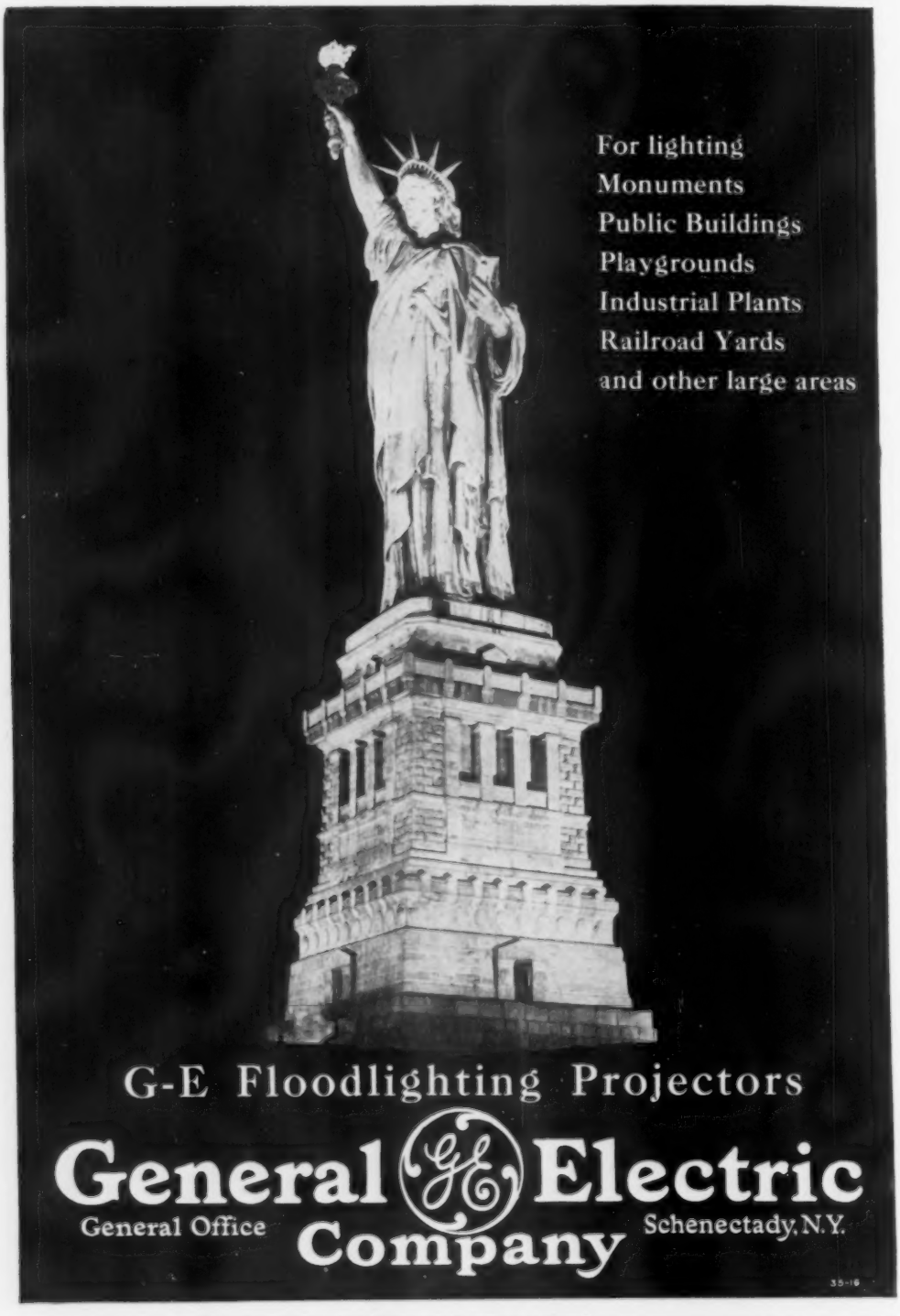


A Scene on the 7-Mile Drive Thru Point Defiance Park, Tacoma, Wash. See "One of the World's Great Playgrounds," page 132

Is Your City Adequately Provided With Public Comfort Stations? See page 131



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The American City

NEW YORK AUGUST, 1919

The Financing of Memorial Buildings

By Harrison G. Otis

Manager, Bureau of Memorial Buildings, War Camp Community Service

EDITOR'S NOTE.—*Latest reports from the Bureau of Memorial Buildings of the War Camp Community Service (formerly the National Committee on Memorial Buildings) show that some 265 cities and towns in the United States have definitely decided upon community houses, auditoriums and other variations of Liberty Buildings as war memorials, and that 1,000 others are considering similar projects.* THE AMERICAN CITY, *feeling that one of the most important questions to be solved by local memorial committees is that of financing the erection and maintenance of these memorials, asked Mr. Otis to write the following article on the subject.*

THE problem of financing memorial community buildings is three-fold. First must come the securing of funds for the erection of the building; secondly, the providing of proper equipment; and, thirdly, some plan for means of maintenance. Local conditions will largely determine the methods to be employed in each city or town, but there are certain principles which will apply very generally.

Construction

Funds for the erection of memorial community buildings may be secured by any one of three general methods:

1. Voluntary contributions by popular subscription
2. Public funds secured by bond issue and taxation
3. A combination of popular subscription and public funds

Popular Subscription.—A strong feeling exists in many communities that funds for memorial buildings should be raised solely by voluntary contributions. The arguments presented are: that such tributes should be the free-will offering of the people as expression of gratitude and thanksgiving to the living and of reverence to the fallen; also, that by taxation soldiers and sailors are made to help pay for their own memorials. The popular method of securing contributions is by a short campaign similar to the "drives" utilized for the collecting of war funds. Every community has had sufficient experience in the conduct of these drives to make a detailed outline of campaign unnecessary. Inasmuch as the memorial building movements are local rather than national, the necessary preliminary publicity will call for more effort, and those in charge of the campaign must develop a strong local program of publicity.

It is usually advisable to have the memorial project sufficiently well worked out so that those in charge of the campaign may have a definite amount of money as the goal of the drive. The details may be postponed, but it is much easier to sell concrete plans than general ideas. By all means the actual drive for funds should be thoroly organized so as to reach every source of contribution. It should be well-timed, and limited to a short, intensive campaign. All possible help in the way of speakers, exhibits and special publicity features should be made use of. Among the devices employed in such drives are:

(a) The sale of stock, non-assessable

and non-dividend paying. Such stock should be issued in certificates of small denomination, and the amount purchasable by a single buyer so limited as not to give the control of the project to a small group of people. This danger may be avoided, however, by providing that all holders of stock shall have equal voice in the election of the memorial building trustees, regardless of the amount of stock held by the individual.

(b) Subscriptions for bricks at one dollar each enter into the campaign plans at Philadelphia and Cincinnati.

(c) Under certain types of organization, memberships of various classes may be sold; or, better yet, all memberships may be of uniform size, the amount being low enough to prohibit no one, and the larger contributors being encouraged to purchase "plural" memberships. Should the membership method be adopted, it is quite essential that the privileges of membership be clearly defined and announced to avoid future misunderstandings. In the majority of cases such membership will carry with it no special privilege other than a vote as to the trustees or directors of the memorial building association.

(d) Many communities are using the simple subscription method as employed for raising funds during the Red Cross and United War Work drives.

In all cases pledges should be made payable on the installment plan, and the amount to be raised should be increased sufficiently to allow for the shrinkage inevitable with the pledge method.

The donation of liberty bonds and war saving stamps should be stressed, and they should be accepted at par.

True democracy is the essence of the community house movement, hence no would-be contributor should be barred because of limited means. Whatever method is used, some provision must be made for small subscriptions. Memorial building stamps similar to war saving stamps and exchangeable for stock, bricks, membership or other larger units may be utilized. Again, a pledge card with dates and amounts in sums of ten cents, twenty-five cents and fifty cents printed around the edges, to be punched upon payment, à la "sugar card," is another workable suggestion.

Public Funds.—Many communities are viewing war memorials as public obligations to be paid for by public funds. Where these memorials are to take the form of buildings to be used by the public and open to all on an equal footing, the argument seems well sustained. This view is particularly defendable when the building is to serve other purposes than those of a community center. Several state legislatures have recently passed laws definitely authorizing the issuance of bonds for the construction of memorial buildings, and providing for taxation as a means of maintenance. Many communities are planning to erect memorial buildings which shall provide space for municipal offices, auditoriums, libraries, art galleries, and other public purposes, in addition to the social and recreational features usually found in community houses. It is, of course, highly proper that all or a large part of the funds for such buildings be secured by bond issue to be funded by taxation.

Combination of Subscription and Taxation.—Where local conditions warrant, the funds for memorial buildings may be raised by a combination of popular subscription and public funds. In many cases where the popular subscription method is being employed, the city council or county commission has been invited to subscribe under the same terms as private contributors. In one instance, the total amount to be raised is being divided into three equal parts; one-third will be furnished by the county, one-third by the city, and one-third by popular subscription.

Equipment

As a general rule, the costs of construction and equipment are combined, and the funds for the joint purpose secured at one time. The equipping of the building, however, offers a unique opportunity for special memorial features. Even in the case where construction funds are raised by taxation it may be found desirable to accept popular contributions for a large part of the equipment. Certainly some provision should be made for gifts from those who desire to commemorate fittingly a relative or friend. These gifts may be in the form of money to be used in the equipping of some special room, or in the form of appropriate paintings, or other definite memorial features. If lodges, societies and

other organizations desire to recognize the services of their members by special memorials, such an arrangement will be found most practicable. For example, the Camp Fire Girls may desire to raise funds for the construction of a large open fireplace; the local art society may contribute a group of mural painting or appropriate pieces of sculpture.

A special committee on equipment and furnishings should be detailed to develop this feature and co-relate such contributions so as to avoid duplication of effort and insure the proper harmony.

Maintenance

The method of securing funds for construction and equipment will determine to some extent the source of maintenance. Yet other factors will enter, chief of which will be the revenue derived from the use of the building. This in turn depends upon the nature of the building and the purposes to which it will be put.

1. REVENUE FROM BUILDINGS

(a) *Rents.*—If the building is to become the headquarters of various patriotic, civic, art, literary or dramatic societies, the rent charged for office room and the use of the auditorium will largely, if not entirely, solve the problem. Then, too, the various facilities may be rented for special occasions. This will apply particularly to the auditorium for concerts and other public gatherings, the gymnasiums and halls for dancing parties, and the banquet-room for private purposes. In many cases the local chamber of commerce will make its headquarters in the building, and the secretary of this association may serve as general custodian of the building. In other communities the building may be under the control of the local post of the American Legion, or of the local community service organization, where a similar arrangement may work out.

In a large number of cities the community building will doubtless be definitely linked up with the public school program, so as to permit the recreational facilities to serve as a gymnasium for school children. In such cases the renting of the community house to the school authorities will go far toward solving the maintenance problem.

(b) *Fees.*—Fees may be charged for gaming privileges, as, for example, bowling alleys and billiard- and pool-tables. Nominal fees may also be charged for adult gymnasium classes, and use of the tennis courts and other playground facilities used by the grown-ups. As a rule, there should be no direct charge for children, and where the school board does not provide for them, some other means should be utilized.

(c) *Profits and Concessions.*—Many community houses, when conducted by a working organization, will maintain refreshment facilities, such as soda fountains, cigar and candy stands and cafés. In such cases the profits will, of course, be devoted to the maintenance expenses. In other instances these concessions may be sublet to private parties at appropriate charges.

2. POPULAR SUBSCRIPTION

Maintenance funds may be provided or augmented by popular subscription, which may be secured by any of three methods, or a combination thereof.

(a) *Annual membership dues.*—There is a danger in the membership idea, as those who are "not invited" or for other reason feel "left out" may be the very ones most in need of the fellowship and services provided by the community house. By taking special care to make the organization democratic, however, this objection can be overcome.

(b) Some communities are planning to conduct *annual drives* for maintenance funds, similar to the Red Cross and other war fund drives. Such a method, while perhaps serving to keep alive community interest, contains an element of possible risk in that the enthusiasm may wane during the course of years, and some more systematic method may commend itself from a business viewpoint.

(c) The *living endowment* plan is finding hearty endorsement in many cases. Let us explain this method by illustration: Supposing it is found that an annual budget of $5,000 is needed. If money will yield a net 5 per cent interest it would require an actual permanent endowment of $100,000 to provide an annual income of $5,000. To raise such an endowment fund at the time of the drive for the construction of the building is seldom advisable, if, indeed, possible. Again, the existence of such an

endowment large enough to support all activities removes from the community house project the element of democracy, as it makes the users of the community house privileges the beneficiaries of those who contributed the endowment. It establishes a patronage that tends to thwart the impulse to pay one's way. None of these objections are to be found in the "living endowment" idea.

To raise $5,000, issue $100,000 worth of living endowment certificates in denominations of from $50 up. These certificates certify that the holder pledges to pay each year for the maintenance of the memorial community house the sum of $——, being the equivalent of 5 per cent interest on the face of his certificate. For example, a $100 living endowment certificate will thus yield $5 a year income for the maintenance fund. Such a certificate may be made "negotiable," so that a holder upon leaving the community may pass on his certificate with its obligations to some friend, notice of such transfer to be mailed to the secretary of the board of directors of the memorial building association. Payment of "interest" may be made annually, semi-annually or quarterly, as indicated.

Blocks of such certificates may be subscribed to by the various societies and organizations, and by business corporations. In this way the community itself becomes the "endowment" and yields the needed income on a systematic self-perpetuating plan. As certificates are canceled for failure to yield the "interest," they may be considered "poor investment," and other certificates issued in lieu thereof. As the community house activities increase and a larger budget is needed, a new block of living endowment certificates may be issued and subscription secured by aid of a short, intensive campaign.

(d) A fourth method of providing for maintenance is that of a regular endowment. In a few communities this method is perfectly feasible and may well be employed to provide at least a large part of the running expenses of the institution. It is quite possible that community houses erected in certain sections of large cities where the population is of a shifting nature would make such an endowment method a practical solution to the problem. Even in this case it is highly desirable that those who use the community house should pay a fair price for most of the privileges, not only as a source of revenue, but as a means of creating and maintaining self-respect and a feeling of independence. Again, instances will be found where wealthy patrons may wish to create an endowment fund as a memorial to individual heroes of the war. In such cases it may be advisable to provide that the income from such endowment be devoted to specific purposes; for example, the maintenance of the recreation field, provision for concert courses, or some other type of definite service.

In conclusion, it seems wise to urge that all problems of finance receive mature deliberation, as it would be most unfortunate if the splendid impulse to commemorate fittingly the principles and heroism of the World War should result in the erection of buildings which will fail to function as fitting tributes to those who served.

The Salaries Paid to Municipal and County Officials

are in most cases grossly inadequate in the light of present-day conditions.

You cannot expect competent management to continue indefinitely on third-rate pay.

What is being done in your community to correct the salary wrongs of public officials and employes?

THE AMERICAN CITY invites correspondence on this subject.

Replanning Boston's Most Congested District

The Recommendations of the Boston City Planning Board for Providing Right Living Conditions in the "North End"

By Elisabeth M. Herlihy
Secretary, The City Planning Board, Boston

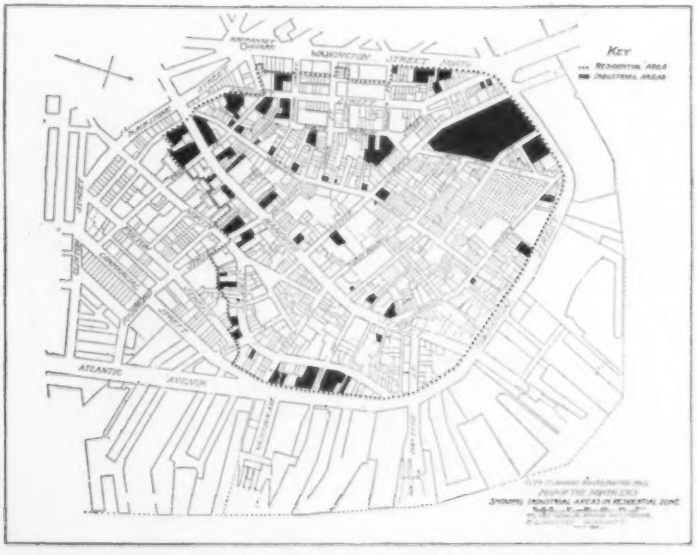
IT is doubtful whether any other municipality in this country has a district so rich in historical associations, so favored in its topographical situation, so cosmopolitan in its population, and withal so unfortunate in its development as is the North End of Boston, a district which was years ago characterized as "the classic land of poverty."

No sight-seeing tour is complete without a visit to this congested section, where one picks his way thru narrow, dark, dirty, damp and ill-smelling alleys, importuned at every turn by eager, scantily-clad urchins who clamor for the privilege of acting as guide to the Old North Church, from the belfry of which flashed the signal lantern—"one if by land, two if by sea"—on that memorable 18th of April, 1775.

The Nature of the District

One of the earliest settled portions of the city of Boston, the boundary lines of the residential district have remained practically unchanged. The encroachments of business and commercial interests have been very slight, while the rate of change in the last half-century, as well as the character of occupancy of the district at the present time, does not suggest any very material change in the near future.

For years the North End has stood as a distinct community of practically one hundred acres, nearly seventy acres of which are devoted to residential purposes. It has a population, according to the 1915 census, of 35,210, of which total those of Italian birth or parentage number nearly 30,000. The area is entirely cut off from all other

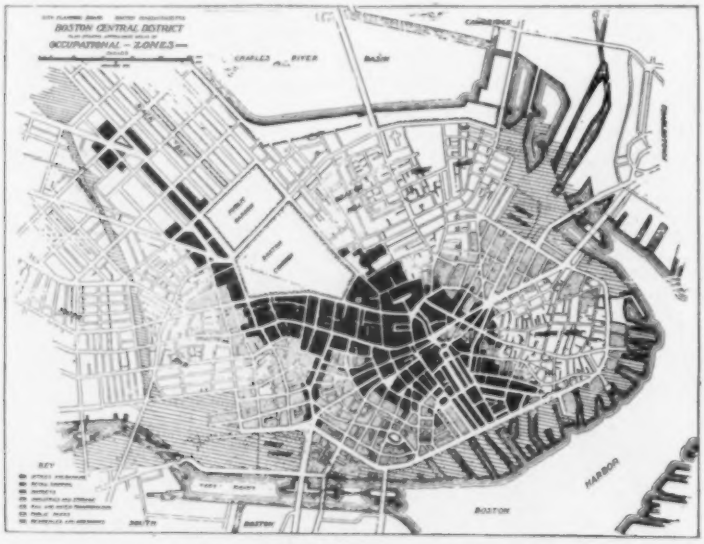


MAP SHOWING BOUNDARIES OF RESIDENTIAL ZONE, WITH NON-RESIDENTIAL AREAS

Residential area bounded by heavy dotted line; black represents industrial areas

residential districts in and about Boston, with water-front activities on the north and east and commercial industries on the south and west.

During the early history of the city, and extending to five or six stories in height, altho in many of the buildings local retail business is claiming the ground floors. In some places the buildings are almost entirely boarding- or lodging-houses; other



MAP SHOWING THE EXISTING DOWN-TOWN ZONES IN BOSTON

Black—offices and banking; hatched—retail shopping; cross-hatched—markets; dotted—industries and storage; hatched and dotted—rail and water transportation; white—residences and accessories

up to the time of the Revolution, the North End was an important residential center, and on the slopes of Copp's Hill—the most important of the hills of the early colony—some of the fine old houses are still to be seen. A series of progressive changes have taken place, however, until now it is chiefly a tenement district, so congested that it has already necessitated much regulation and many costly improvements, but is still greatly in need of wholesale reformation if living conditions are to be made wholesome and agreeable.

The Housing Conditions

With the moving away of many of the old families, a gradual change took place in the district. The buildings were divided into smaller apartments to meet the demands for cheaper rents; tenements were built, and overcrowding resulted both in buildings and on the land. The general tendency at the present time is toward concentrated habitations, covering all available space and sections still contain single houses, but these are gradually giving way to tenements; the hotels are more or less scattered on chance sites; while in the heart of the district there is a veritable civic center where schools, the library, and public open spaces occupy a considerable area.

Housing conditions in the North End have afforded a fruitful field for investigation and reports for years, but the recommendations contained in the recent report of the City Planning Board constitute the first attempt on the part of any agency to solve the problem as a whole, and to restore the North End to its rightful place among residential communities.

The North End of a hundred years ago was built on generous proportions. Large back yards afforded ample space for the exercise of agricultural tendencies brought by the early residents of the district; but the population changed; the back-yard gardens gave way to unrestricted building, until within the space of a century practi-

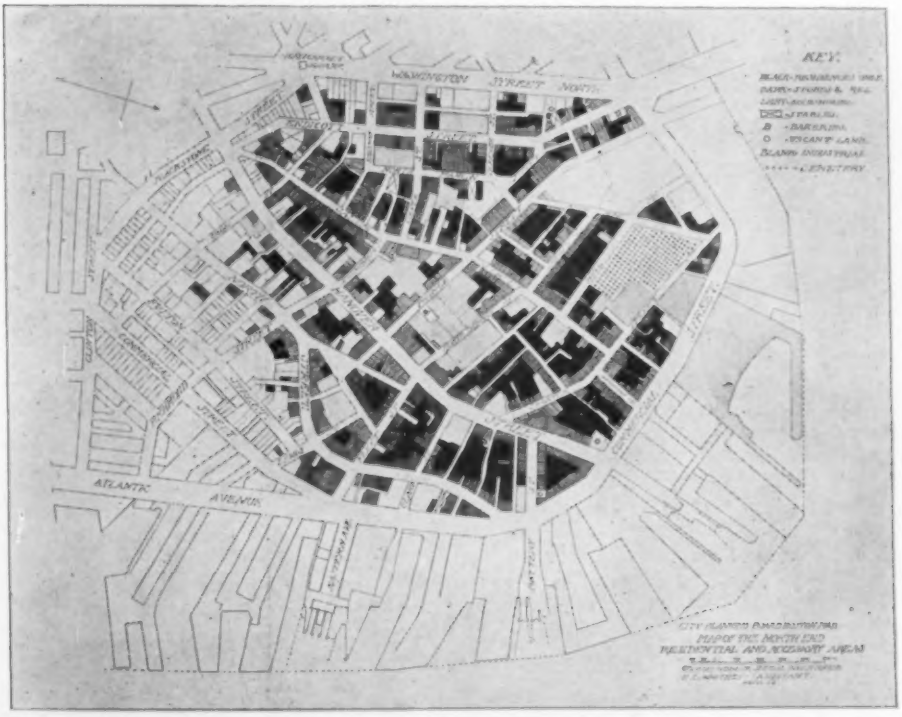
cally every available foot of land was closely built over. This development, or mis-development, is clearly shown in the plan of the City Planning Board for the widening of Greenough Lane.

This block might be considered a typical illustration of the rear lot problem as it exists in the North End to-day, which was found to be the most serious phase of the whole situation.

In its investigation the Board assumed that a lot 60 feet in depth, fronting on a street of reasonable width, with a small rear yard, could be built over in such a way as to provide wholesome living accommodations. In the rear of lots in excess of 60 feet in depth, there are large areas of land in which now most of the seriously menacing conditions in the North End are to be found.

In the illustration on page 110 are shown all the streets 25 feet or more in width, together with the public open spaces, and all back lands more than 60 feet distant. These back lands cover nearly 13 acres, or 13 per cent of the total area of the district, and lie almost wholly within that portion devoted to housing. It is in an attempt to open up these back land areas, and to provide the houses of the district with a reasonable amount of light and air, that the City Planning Board has devoted three years of intensive study to the problem. Much has been done already to legislate against unwholesome conditions, and more can doubtless be accomplished, but as long as the ground plan of the properties is radically wrong, undesirable conditions will continue to exist and will probably increase.

Of course there are poor housekeepers and neglected children in the North End, as there are in every other section of the city, but the real trouble is much more fundamental than the frailties of human nature. People cannot be compelled to live

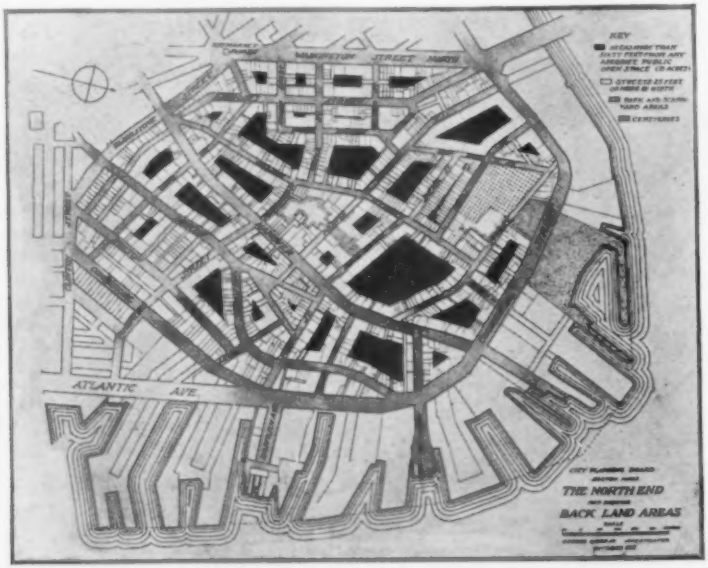


MAP SHOWING AREAS USED FOR RESIDENTIAL AND ALLIED PURPOSES

Black—residences only; dark—stores and residences; light—accessories; B—bakeries; O—vacant land; blank—industrial; diagonal cross—stable; cross—cemetery

rightly until right living conditions are available.

The willingness of the people to respond is shown by a visit to the Morton Street District, where a one-half-acre park is being constructed, at an expense of $200,000, in the heart of a block covering about one and one-half acres, and formerly housing over one thousand people. The clearing away of the old houses allowed sunlight to enter many of the adjacent homes for the first time in nearly half a century, and the windows, whose only outlook for years has been on dark and narrow streets, or dismal alleys, are now abloom with plants, thriving in the sunshine which has for years been denied them.



MAP OF BACK LAND AREAS IN THE NORTH END

Gray—reasonably wide streets; dotted area—public open spaces; black—rear lands 60 feet or more from such open spaces

In the general plan for improvements as proposed by the City Planning Board every one of the back land areas is opened up in such a way that, if the recommendations of the Board are carried out, every place of abode in the district will be provided with a reasonable amount of light and air. This "consummation devoutly to be wished" is brought about by means of the extension, widening, or relocating of existing streets, and the creation of a number of neighborhood outing places, little more than breathing spots, for the benefit of the mothers and small children who are unable to avail themselves of facilities at a greater distance, and who are now dependent upon doorways, streets and alleys for their recreation and fresh air.

Increasing the Recreational Facilities

It is estimated that there are in the district fully four thousand children under the school age, and a total of over ten thousand children under approximately fifteen years of age. The provision of adequate recreational facilities for its children is a serious and imperative obligation on the part of any municipality. The City Planning Board survey shows that while there are nearly eight acres in the North End at the present time devoted to park, playground and beach purposes, about three acres are available only for bathing, leaving a little less than five acres of actual playground space.

The greater part of this area is comprised in the North End playground, located on the water-front, but separated from the residential portion of the district

by a broad teaming thorofare, also traversed by electric cars, freight trains to and from the market district, and the Elevated structure. In order to make this playground more accessible, the Board suggests a bridge from the Copp's Hill Terraces, passing immediately beneath the upper Elevated structure and well above the busy street. Such a bridge, while connecting directly with the playground by means of a flight of steps, could also be continued by means of an elevated walk at practically the same grade, to the recreation pier. This would do away with the present danger to children in crossing the street with its numerous car tracks and heavy teaming, and also afford convenient access to the playground and recreation pier for mothers with baby carriages, since the grade is at no point severe.

THIS VIEW OF BOSTON'S NORTH END BEACH AND PLAYGROUND SHOWS ALSO THE PROPOSED BRIDGE CONNECTING PLAYGROUND AND RECREATION PIER WITH COPP'S HILL TERRACES

So far as the bathing beach is concerned, it is estimated that approximately 200,000 persons avail themselves of its facilities during the season; the bath houses provide for 600 or 800 men and as many women, and many of the bathers dress at home. The slope of the beach is such that for six hours out of every twelve there is very little water, owing to low tide, and it is always far from clean. The City Planning Board recommends that this condition be overcome by the construction of a dam near the end of the recreation pier. This would keep the water on the beach at a high mark at all times, and the beach could be maintained and kept clean by a flow of tide water thru controlling inlet and outlet devices.

Another recommendation which would add to the recreational advantages of the district and at the same time serve to properly preserve one of its historical features is the creation of the proposed Paul Revere Park. In the block which contains the Paul Revere House there are several lots of excessive depth, and a number of dwellings on interior lots without proper street frontage or adequate light and air. The Board recommends that certain of these lots be

taken to form a small public park, thereby affording adjacent buildings an attractive outlook, and lessening the fire risk in connection with the Paul Revere House itself, which has been preserved by an historical society.

A New Main Thorofare

Of the specific recommendations contained in the report, the major improvement is that of a proposed main thorofare directly connecting the wholesale market and cold storage warehouses with the Charlestown Bridge. At the present time, produce teams coming and going to the northern part of the city and the districts beyond become delayed and congested on the narrow streets thru which they now have to pass. From every point of view this proposed main thorofare follows the line of least resistance. The route lies along the line of easiest grades, and falls almost exactly on the line of demarcation between high and low property values in the district. Other possible routes to the northeast and to the southwest were discussed, and were rejected in favor of the plan proposed. To the northeast steeper grades would be encountered for a portion of the way, and there would be interference with the present grouping of playground, schools and gymnasium, as well as various traffic complications. To the southwest, property valuations are much higher, and the cost of construction would be increased, as the distance over such a route would be longer. Also, the proposed street line includes streets that already exist, such as Parmenter, Richmond and Endicott Streets, so that for the greater part of the way it means no more than the widening of streets already determined.

What It Will Cost

In figuring the cost of the entire improvement, there were taken into consideration the assessed values of the properties involved, the additional costs for taking, construction costs, and the loss in taxes during the period of reconstruction. Against this probable gross cost of the undertaking, there should be reckoned the possible revenue from the assessments of betterments, from the sale of lands after improvement, from the sale of buildings, and the increase in tax returns. On this basis, the net cost of the improvement is shown to be $2,324,502, over one-half of which is involved in the construction of the proposed main thorofare.

It is planned that some of these takings shall be made under the law of excess condemnation, which was accepted by a large majority of the people in 1911 as an amendment to the Constitution (Article 39), altho as yet practically untried.

As a further credit against the net cost of $2,324,502, there are a number of factors which, altho impossible to estimate in dollars and cents, nevertheless have a very appreciable value in their relation to any community. If the improvements are carried out as planned, the provision of light and air will yield a return in health and morals which is incalculable; street traffic thru and about the district will be greatly facilitated; and a number of small neighborhood play-spaces will have been established which will go far toward furnishing the youth of the district with convenient opportunity for healthful recreation.

As has been stated, the population of the North End, according to the latest census, is 35,210. The value of real estate within the same area is about $32,000,000. Of this amount, nearly $3,500,000 is withdrawn from taxation as city-owned property, including schools, library, fire and police stations, together with religious and charitable institutions. The investment in recreation facilities in the district totals nearly another million dollars; and while the City Planning Board does not claim that all the improvements represented by this further appropriation of two and a quarter million dollars should be put into immediate execution, it does believe that the entire plan, if adopted to be carried out as opportunity offers, will be justified by the improvement in living conditions over which the city is the official guardian, and upon which the welfare and prosperity of the municipality depend.

The Building of the Municipal Docks at St. Louis

City and Federal Governments Cooperate in Providing Better Waterway Transportation

By M. Serkes
Assistant Engineer, Department of Public Utilities, St. Louis, Mo.

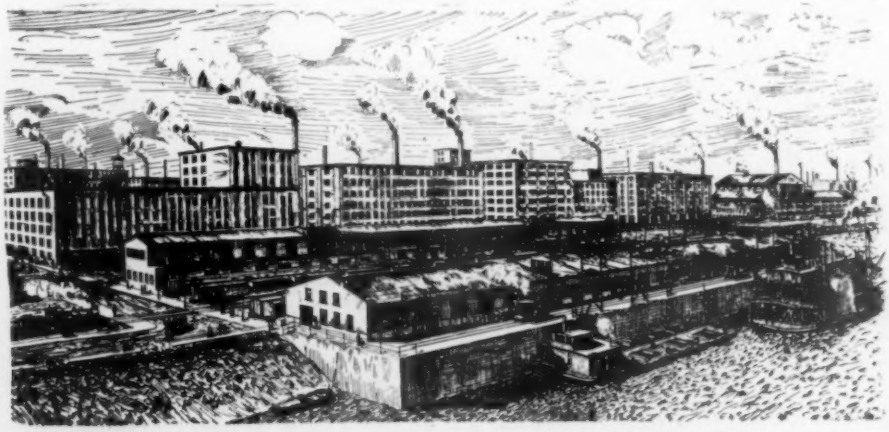
WHEN the great war began, it became evident that the railroads had more freight to carry than they could handle, and the collapse of the system seemed inevitable. A cry was heard from all parts of the country to utilize the waterways to relieve this situation. With this in view, the Government appropriated $18,000,000 for the purchase of equipment for use upon the Mississippi River and for the benefit of St. Louis, provided the city would cooperate by building proper docks and terminals.

To meet this demand, the city of St. Louis has taken up the construction of docks and river terminals with the idea of opening up the river and making St. Louis an inland port, connecting with Cairo, New Orleans, and all the great seaports of the world, so that raw material and manufactured goods from the interior of the United States can reach the outside world by water navigation.

The Site and Its Preparation

An investigation for a dock site was made by the city along its municipally-owned river front, and of the six sites suggested, the section opposite North Market Street was chosen. This location is very close to the business district, and is surrounded by many manufacturing and shipping concerns and by railroad yards which radiate into South and North St. Louis, the Mill Creek Valley, the Northwest Belt Line, and across the river into Illinois. Here the streets approaching the dock are paved, and have easy grades for wagons and trucks.

The harbor lines at this location were far enough out from the wharf line to give ample facilities for the construction of warehouses, storehouses, and railroad terminals behind the docks, and for the future extension of the dock north or south to North Market Street. Here the depth of the river bed between the inner and outer harbor lines was sufficient to meet the Government requirements, and permission was obtained from the Government to locate the face of the dock half-way between the harbor lines, on condition that the city keep the river bed between the dock face and the outer harbor line clear from obstruc-



SKETCH OF THE ST. LOUIS MUNICIPAL DOCKS AS THEY WILL APPEAR WHEN COMPLETED

tions and sediment to a depth of 10 feet below zero on the gauge, so as to enable loaded barges and boats to reach the dock at the lowest stages of the river.

This position of the dock brought the dock wall about 250 feet in front of the river bank, necessitating the placing of about 500,000 yards of fill, upon which warehouses and railroad tracks could be built. In order to hasten this fill, the dumping of city dirt and refuse was encouraged, and two wooden pile dikes were immediately constructed, about 150 feet and 900 feet, respectively, north of the dock site. The dikes start at the river bank and extend out into the river at right angles, terminating on a line with the face of the dock. The spring floods of 1917 and 1918 deposited about 150,000 yards of sand and mud behind the dock site, and the remaining amount is being rapidly filled in by public dumping.

The dikes were built of timber piles from 30 to 60 feet in length, and driven to refusal or a maximum penetration of 20 feet; they were driven at such spacing that they could be drawn together and tied with ½-inch galvanized wire and spiked, forming a cluster of three piles; these clusters were spaced 10 feet on centers and framed together, making a solid dike.

To prevent the river from scouring under and washing away the pile dikes, a mattress, consisting of 1-inch boards, was woven and spiked together upon the barge, then pushed off the barge into the river as the mattress advanced in construction. It was held in place by cables to the bank. When entirely completed, the mattress was sunk with riprap to the bed of the river. Each mattress was 80 feet wide and about 200 feet long. Upon and thru the mattresses the dike piles were driven.

Another similar mattress, 80 feet wide and 1,000 feet long, was made and sunk with riprap on the river bed, parallel with the face of the dock and extending 10 feet under the face of the dock. This mattress was placed at this point in order to prevent the river from cutting under the face of the dock and undermining the foundation.

The Dock Foundation

The foundation of the dock structure consists of about 2,000 timber piles, driven on 4-foot centers in each direction for a width of 37 feet and a length of 900 feet. These piles were 45 to 50 feet in length, and were driven by means of a steam vulcan hammer and jet to a penetration of 35 to 40 feet, allowing 8 to 10 feet of piling to project above the river bed. They were driven on a batter of 2½ inches horizontal to 12 inches vertical, which placed them parallel with the resultant of the weight of the dock and the bank pressure, thereby eliminating any tendency of the dock to slide forward towards the river. Around these piles, riprap to a depth of from 8 to 10 feet was dropped from a barge, taking care to slope the riprap from the face of the piles in front of the dock. This placed the top of the riprap at 2 feet below zero on the gauge, and left about 2 to 3 feet of piling projecting thru the riprap.

Temporary piles, extending 12 feet above zero on the gauge, were driven along the face, side and back of the dock site, against which wooden bulkheads were placed, 12 to 14 feet in height on the front of the dock and 4 feet on the back, so that the concrete foundation slab could be poured around and on top of the piles projecting thru the riprap. The foundation was poured at various low stages of the river from a mixing plant and steel tower on top of the bank, by means of gravity chutes and bottom-dump buckets, taking care to place the concrete under water without much disturbance. This gave a monolithic slab of concrete 37 feet wide, 900 feet long and 4½ feet high, resting upon and held in place by the 2,000 foundation piles.

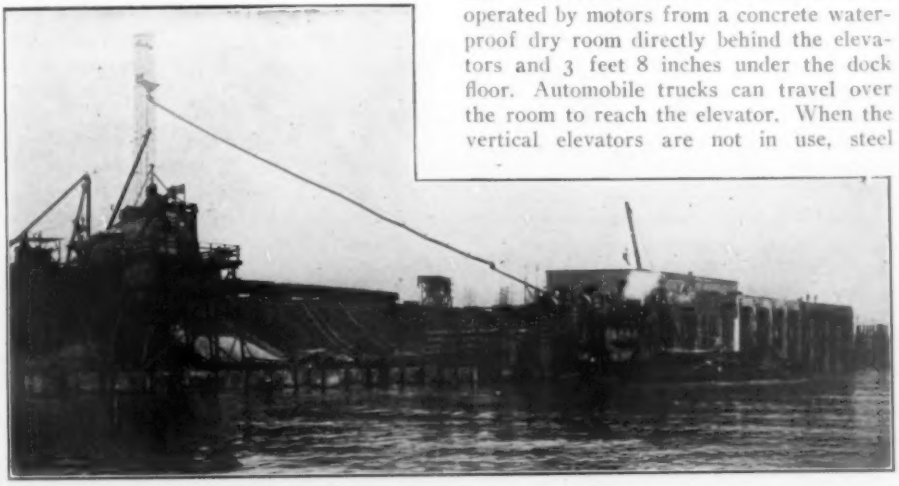
The Dock Structure

Upon this foundation slab the dock structure is being built. It consists of a reinforced concrete viaduct 36½ feet wide, 40 feet high and 890 feet long, with bents 20 feet on centers, and the deck or top of "T" beam and slab construction. The viaduct is divided into five units, each 160 feet long, and separated by large elevator openings 22½ feet wide.

Upon this slab, concrete footings, 4 feet x 6 feet and 7 feet high, were poured and bonded to the foundation slab by projecting steel rods. On top of the footing piers rest the intermediate bents, 20 feet on centers. The top of the footings is 9 feet above zero, which enables the superstructure of the dock to proceed in construction when the

river is about at this stage. The bents, or superstructure, consist of reinforced concrete arch construction. The 20-foot openings between the bents were designed to permit the fill behind the docks to slope down underneath the face of the dock, thereby partially relieving bank pressure upon the dock structure.

The top of the dock consists of heavy slab and "T" beam construction, extending over eight bents 20 feet on centers, which forms one unit of dock 160 feet long. On top and imbedded in the concrete are six 85-pound rails, bonded together with copper wire bonds in order to provide current for electric cranes. The two outer rails, 34½ feet on centers, are to be used for an overhead traveling crane of the gantry or



THE ST. LOUIS MUNICIPAL DOCKS UNDER WAY, SHOWING CONSTRUCTION PLANT

revolving type, and the four inner tracks (of standard gauge) for the unloading of railroad cars or for the working of revolving cranes.

The front of the dock has an arched beam, for appearance and strength, and the back has a partial curtain wall extending down 12 feet from the top of the dock to hold back the fill behind the dock and allow it to slope off underneath to the face. This slope will be heavily riprapped. Openings are being left in the back wall and in the dock floor for the installation of inclined conveyors and shutes. In order to protect the face of the dock from damage by boats and barges, wooden rubbing strips, 12 inches x 14 inches x 35 feet long, have been bolted on to each bent. Spiked ladders have been placed upon these bumpers for travel from boats to the top of the dock. Each unit has twenty-five cast iron cavels on the river side for tying purposes, electric lights, and water connections for the use of boats and fire protection.

The Dock Equipment

Between the units, a space of 22½ feet was left for the installation of large vertical elevators, 18 feet wide and 25 feet long, with a lifting capacity of 15 tons, to enable the handling of package freight and to permit the largest automobile trucks to travel from the street level to the barges, and vice versa. The elevators are to be operated by motors from a concrete waterproof dry room directly behind the elevators and 3 feet 8 inches under the dock floor. Automobile trucks can travel over the room to reach the elevator. When the vertical elevators are not in use, steel girders which have been provided can be dropped into place by a moving crane, and plank floors can be placed between them, thus forming a continuous dock floor for the travel of railroad cars or cranes from one unit of the dock to another.

A wooden warehouse, 60 feet x 128 feet, with a 10-foot platform on three sides, has been constructed 25 feet back of the first unit of the dock, for receiving inbound and outbound freight. This space of 25 feet between the warehouse and the dock was left for the purpose of placing a double railroad track, to enable the handling of freight directly between car and dock without pass-

ing thru the warehouse. A double track was placed directly back of the warehouse, for freight that is to pass thru the warehouse or be held for various periods, in order to release cars when barges are not immediately available. These tracks are planked so that wagons and trucks can reach the unloading platforms when the tracks are not in use.

Large warehouses, 200 by 400 feet, of permanent construction, are to be built directly behind the docks, with storage tracks and loading platforms between tracks at either end. Large openings are to be left between warehouses to act as fire-breaks and to enable trucks to reach the ends of the houses for loading and unloading. Storehouses will probably be built some distance back of the warehouses and be interconnected by means of overhead conveyors, so that goods left in the warehouses more than four or five days can be cheaply transferred to storage.

For the handling of miscellaneous package freight and bulk material quickly and economically from warehouse, dock and boat, many mechanical devices are to be installed, such as continuous conveyors, electric storage battery trucks, locomotive and traveling gantry jib cranes, overhead monorail telfers, and overhead wharf cranes. At present, two cranes are in operation upon the dock floor and others are to be installed.

The entire length of dock when completed will be 900 feet, which will give St. Louis the most modern river terminal in the United States. The estimated daily capacity of the dock, now three-fifths completed, will be about 2,700 tons, which can be readily increased by extending the docks to the north or south, as increased business may warrant. One section of the docks has already been turned over to the Government, and weekly sailings are being maintained from both St. Louis and New Orleans, affording shippers a 20 per cent reduction in freight rates. A double railroad trestle is at present being built at the north end of the dock, to enable railroad cars to be switched on the dock floor so as to load and unload directly to and from barges.

This work is being carried on under the direction of James A. Hooke, Director of Public Utilities, with William H. Smith, engineer in charge, and C. E. Smith & Company, consulting engineers, St. Louis, Mo.

Engineering Problems of Regional Planning

By Morris Knowles

Chief Engineer, Housing Department, Emergency Fleet Corp., U. S. Shipping Board

TOWN planning no longer seeks the "city beautiful" alone; its ideals have broadened and deepened until they comprehend all that is implied in that true beauty which consists in the harmonious adaptation of a thing to the needs of human life. And so, from a question of art, town planning has become more and more one of engineering.

Regional planning is still newer as a conscious art. Born in the efforts of neighboring towns to coöperate in the solution of their joint engineering and utility problems, it has developed until to-day its ideals, as applied to regions, are as broad as are those of town planning. The origin of this new art guarantees from the start that its dependence upon engineering will be recognized.

Survey

The first requisite of a regional plan is a comprehensive survey of the topography, geography, population, natural resources, agriculture, industry and trade of the region. One result of such study should be a complete topographic map of the area which may serve as a base map for the regional plan. Not only should this map show the topography, and locations of towns, railroads, streams, canals, and other natural and structural features, but the data on natural resources, agriculture and industry should be correlated with it in such a manner that maps may be prepared showing the relative distribution of all the factors affecting the life of the region.

Steam and Electric Transportation

Railroads are the arteries thru which the life-blood of our country's trade flows. Fortunately, the consideration of natural resources, most favorable locations of in-

dustries and movements of population which should mold the regional plan has generally guided the self-interest of those who have been responsible for the development of our railroads up to the present day.

The new order that is to be established in the near future, when the railroads are returned to their owners, must provide for avoiding so far as possible the mistakes of the past, and regional planning is an especially timely topic, offering a method by which future railroad developments may be made to conform to a wisely planned conception of the public interest.

Main Highways

The amount of wealth which is produced and which cannot be placed upon the railroad without the intervention of a haul by wagon or truck is vast. Agricultural communities are wholly dependent upon highway transportation for their life. And the growing use of automobiles and trucks and development of interurban vehicular traffic give highways more importance than ever before. But regional planning cannot permit the highways of the future to be located and constructed as have been many of those of the past. The regional plan should provide a highway program harmonious with the programs for the solutions of the other problems of the region, which may serve as a guide for the construction of main highways during a period of years to come.

Water and Sewerage Systems

The advantages of regional water and sewerage systems are often particularly striking, and serve excellently to illustrate the value of the regional plan. The sources in any region, suitable for water-supply purposes, are limited in number and capacity, and a city may do lasting injury to a region by developing its supply without regard for the needs of its neighbors. This was recognized by a state department of health recently, where approval on a joint project for two important cities was withheld until the state had time to investigate thoroly the water resources and the needs of *all* the population within the region.

Sewerage is strictly a drainage area problem, and unnecessary expense as well as mutual damages of many kinds results from attempts to solve it with respect to political boundaries alone. Moreover, the bodies of water into which sewage may be discharged, like the source of water-supply, are limited in number and in oxidation capacity, so that the problem of sewage disposal is also a regional, and not a local, problem.

Not only does the public health require the planning of water systems and sewerage systems on regional lines, but it requires also that they be planned in relation to each other. The availability of sources of water-supply within a region is determined largely by the locations of its sewerage outlets. And the extent and character of sewerage treatment needed to avoid nuisance depend considerably upon the prospective use of its water resources for water-supply purposes.

All these advantages have been frequently recognized in the handling of water and sewerage problems. State departments of health have established supervision of water-supplies and sewerage systems, so as to prevent communities from injuring one another, and to maintain standards within state lines. And many examples exist of joint action by neighboring municipalities for the solution of their common problems.

Stream Regulation

Another problem for which satisfactory local solutions are obviously impossible and drainage area solutions absolutely indispensable is that of stream regulation and water conservation. Navigation requires a uniform sufficient depth of water thruout the navigable length of the stream. Local flood protection works may actually increase flood heights above or below them. The best utilization of water-power requires that its development and distribution be based on regional, and not on local, considerations.

A diversion for water-power purposes may destroy an important future source of water-supply. Certain types of flood protection works may prevent the utilization of a stream for navigation. Reservoirs may often be utilized for a combination of purposes. And the regional plan will consider stream regulation from the point of view of securing from the water resources of the region, at the lowest cost, the combination of uses which will contribute most to the

welfare of the population, and to the solution of their other regional problems.

Light and Power

The type and locations of regional sources of light and power will depend largely upon the characteristics of the region with respect to availability and location of coal, natural gas and hydroelectric power. But the economic advantages of power generation in large central stations need no demonstration in these days of efficient, large-capacity generators and of high-tension transmission. Enlightened self-interest has long recognized this, and the results may be seen in the unification of the gas-supply systems in the neighborhood of every field of natural gas, and in the huge electric central stations and the network of electric supply and distribution lines which characterize every one of our large urban districts.

Organization

Organization for carrying out the works of a regional plan is not solely an engineering problem. Existing political organizations must, of course, be the basis of it. The type of organization depends in each case not only upon the existing political organization and upon the area and density of population of the region, but also upon the particular purposes or combination of purposes to be accomplished. Most of the important cases can be classified under one of six headings, as follows:

1. Extension of municipal limits, and consolidation or annexation
2. Extension of municipal jurisdiction
3. Contracts between municipalities
4. County administration
5. Private enterprise
6. District organization

Within a given region each of these types of organization may be represented. But the conception of regional planning contemplates that all of them shall be directed and guided by the regional plan—that the plan shall be a kind of regional constitution with which the subsidiary organizations must not conflict.

Apportionment of Cost

Like the problem of organization, apportionment of cost is in large degree a financial, legal and political problem. But like the selection of organization types also, it is so closely bound up with the use of public works that it is largely an engineering problem, too. In most cases, the method used may be classified under one of four headings, or as a combination of more than one of them.

General taxation.—This would provide simply that the portion of the cost of works so paid would be disbursed out of the funds of the region, state or nation and assessed upon taxable property, real and personal, or upon incomes, by the proper authority, in the same manner as that in which all other taxes are assessed. It would be applicable only to the portion of the cost of works chargeable to the general interest, and would normally be confined to the region benefited by the works.

Special assessment.—The theory underlying special assessments is that the property on which they are imposed receives particular benefits and that general taxation for such purely individual purposes is unjust. Any community, individual or land that receives a particular advantage should pay for it in proportion to the benefit derived. It is evident that no fixed rule can be established to cover distributions of the expense of large public works, such as we are interested in. Also, there should be no assessment in case no benefits are derived, and, as has been held by some court decisions, "burdens in excess of benefits * * * must be borne by general taxation."

Rates.—This method of apportioning cost is applicable especially to public utility services, like steam and electric transportation, light and power systems, and joint water-supply and sewerage systems. Their determination, so as to fairly apportion the necessary gross revenue, is an intricate economic and engineering problem, and public supervision by utility commissions is required to make sure that they are maintained at a reasonable level.

In summary, it may be said that the great engineering problem of regional planning is the comprehensive planning of all of the features with consideration of their relation to one another, so as to secure the greatest good at the lowest possible cost.

Acknowledgment.—From a paper read at the eleventh National Conference on City Planning, Niagara Falls, N. Y.

The Municipal Asphalt Plant of the District of Columbia

The Record of Operation for 1918, with Cost Data

By C. B. Hunt
Engineer of Highways, Engineer Department, District of Columbia

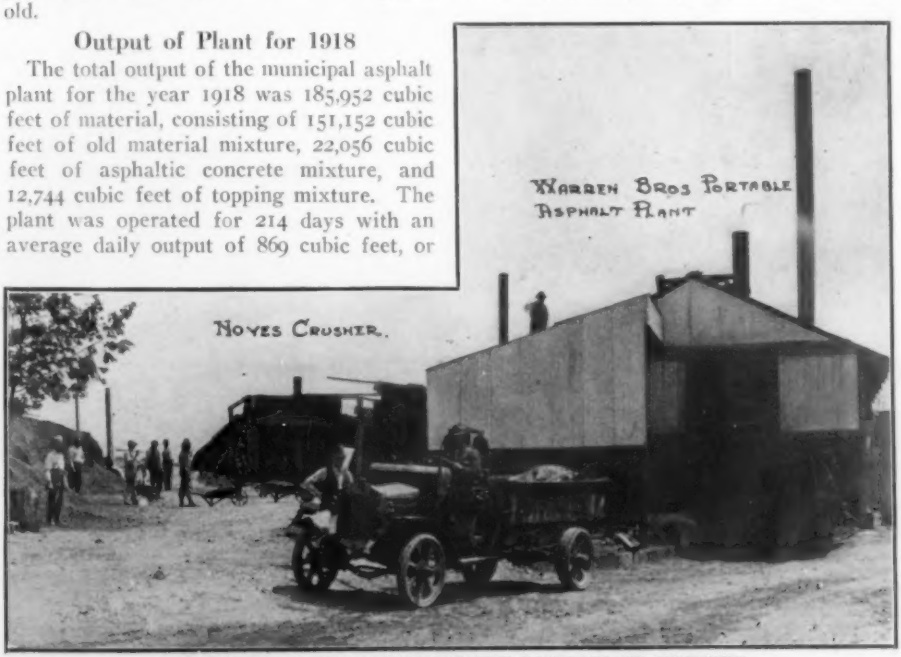
THE municipal plant of the District of Columbia began operation in 1912. During the first three months repairs were made by contract, and for the last three-quarters of the year and continuously since that time all repair work has been done by the municipal plant. The marked reduction in cost for 1917 was affected very significantly by the law effective that year by which repair of pavements over one year old is chargeable to repair appropriation instead of being paid for by the paving contractors under a five-year guarantee, as formerly. The yardage of pavement over which the repairs by the municipal plant were distributed was thus increased by nearly 700,000 square yards on which practically no expenditures were needed, as the pavements were only from one to five years old.

Output of Plant for 1918

The total output of the municipal asphalt plant for the year 1918 was 185,952 cubic feet of material, consisting of 151,152 cubic feet of old material mixture, 22,056 cubic feet of asphaltic concrete mixture, and 12,744 cubic feet of topping mixture. The plant was operated for 214 days with an average daily output of 869 cubic feet, or an increase of 132 cubic feet in the daily output over that of the previous year. In connection with the output of the plant the stone crusher was operated for 101 days during the year, and 3,159 cubic yards of old material was hauled to the plant from the various streets for crushing.

Hauling by motor trucks was introduced during the year, and this innovation in the method of hot haul was found to be both economical and advantageous. About 90 per cent of the hot haul is now being performed by motor trucks which have replaced the old horse-drawn carts and wagons.

Constant attention is given to the maintenance of both the plant and the crusher, repairs being made and parts replaced when necessary, thereby keeping them in the best



MUNICIPAL ASPHALT PLANT OF THE DISTRICT OF COLUMBIA

operating condition possible. This cost is incorporated in the total cost of output shown below.

The following materials in amounts set forth below with unit costs were purchased for use in manufacturing the output during the year:

Sand, 2,675.25 cubic yards, cost	$1.43
Haul of bank sand, 418 cubic yards, cost	1.20
Asphaltic cement, 368.35 tons, cost	19.10
Asphaltic cement, 57.50 tons, cost	26.34
Limestone dust, 250 tons, cost	3.63
Screenings, 500 tons, cost (average)	1.30

The costs of operation, including material and labor, are kept from day to day, and a summary of the data for the fiscal year develops the following unit cost for the year's operation:

2.10 pounds limestone dust, at $3.63 per ton.	$.0038
4.12 pounds asphaltic cement, at $19.10 per ton	.0393
Cost of material	.0844
Manufacturing and placing cost	.3685
Total cost per cubic foot	$0.4529

ASPHALTIC CONCRETE MIXTURE

0.50 cubic foot screenings, at $1.30 per ton (2,000 pounds)	$.0331
0.50 cubic foot sand, at $0.59 per cubic yard, hauled, $0.84 cubic yard	.0265
4.20 pounds limestone dust, at $3.63 per ton.	.0076
9.16* pounds asphalt cement, at $19.10 per ton	.0875
Cost of material	.1547
Manufacturing and placing cost	.3685
Total cost per cubic foot	$.5232

TOPPING MIXTURE

1.00 cubic foot of sand, at $0.59 per cubic yard, hauled, $0.84 cubic yard	$.0530

QUICK, THORO WORK IS THE MOTTO IN THE DISTRICT OF COLUMBIA

OPERATION OF CRUSHER

Period of operation, 101 working days; output of crusher, 3,159 cubic yards. Cost of crushed product per cubic yard:

Labor and material	$0.9523
Repairs to plant	.0888
	$1.0411

The sand used was bought under contract at 59 cents per cubic yard and hauled from the wharf to the plant at a cost of $2,585.57 for 3,093.25 cubic yards, or 84 cents per cubic yard, a total of $1.43 per cubic yard.

The cost of a cubic foot of old mixture is shown in the table below:

0.60 cubic foot of old materials, at $1.05 per cubic yard	$0.0233
0.34 cubic foot of sand, at $0.59 per cubic yard, hauled $0.84 per cubic yard	.0180
4.20 pounds limestone dust at $3.63 per ton.	.0076
9.16 pounds asphaltic cement at $19.10 per ton	.0875
Cost of material	.1481
Manufacturing and placing cost	.3685
Total cost per cubic foot	$.5166

* 10 per cent tare weight.

The total cost of minor repairs to sheet asphalt pavements during the year, representing the maintenance cost during the year, was $51,493.07. This cost represented the maintenance of all asphalt streets under guarantee by contractors, a total yardage of 3,064,706. The cost per square yard was therefore about 1.7 cents.

Chamber of Commerce Buildings—Their Uses and Possibilities

The Seventh and Last Instalment of a Series of Items on the Homes of Commercial Organizations, with Descriptions of Their Club Facilities and Their Uses as Community Centers

ADRIAN, MICH.—The building occupied by the Adrian Chamber of Commerce was recently presented to the organization outright by Dr. A. M. Stephenson, who formerly occupied it as a residence. With slight repairs, which the Chamber made at its own expense, the building was available for use. It is intended later to remodel the building entirely and include an armory in the scheme.

None of the space is rented to other organizations, altho the Home Service section of the Red Cross maintains offices in the building, and the visiting nurse of the Associated Charities has desk room in it, also a workroom for the repair of clothing donated for local distribution. No rent is charged these organizations.

The Chamber of Commerce occupies approximately 1,000 square feet of space for its work. In this space are the Secretary's office, the Directors' room, the entrance hall, the stenographer's office and waiting-room, two storerooms and a lavatory. There are three rooms not at present being used and not included in the 1,000 square feet that are suitable for committee meetings, etc.

The building is not provided with special social or club facilities, but it is much used as a community center. It is, in fact, thrown open for every kind of civic gathering. There is no regular auditorium, and the meetings are held in the Directors' room.

* * * *

MILWAUKEE, WIS.—The arrangement adopted by the Milwaukee Association of Commerce in the establishment of its present quarters is both unusual and interesting. The Association for many years lived in large office buildings which were only partially suited to its needs. The problem of erecting a home of its own came up for consideration from time to time, and it was a constantly recurring question whether the building should be a club house, with all that such an establishment implied, and the Association continue to conduct serious promotional activities, or whether it should be a well-equipped commercial organization building with club facilities. The organization felt the need of a suitable auditorium which could be utilized for noon luncheon meetings, also of smaller dining-halls for committee luncheons, but it did not feel that an organization that concerns itself with the economic and civic progress of the community should divert its energies to kitchen and dining-room troubles, billiard and bath-room regulations, etc. An arrangement was finally decided upon which made this unnecessary and at the same time enabled the Association to supply its members with all needed club facilities.

The Milwaukee Athletic Club, which was also housed in an office building, had reached the period in its career when a properly equipped club house was required because of the increasing demands for such facilities as it had been offering to the public. The club was not strong enough, however, to finance a large building enterprise without assistance. Whereupon, the Milwaukee Association of Commerce agreed to join hands with the Athletic Club in the construction of a building designed to accommodate both organizations. The result was the twelve-story club house illustrated herewith, which was erected at a cost of $750,000 on a corner lot valued at $200,000.

The Athletic Club financed the undertaking by issuing bonds for the amount of money required, 90 per cent of which were taken by the members of the Association of Commerce. The ground floor was arranged for stores, and the entire second floor was given over to the Association of Commerce. Under this arrangements the Athletic Club is the landlord and the Association of Commerce a tenant, notwithstanding the fact that the greater portion of the investment is held by the members of the latter organization.

The floor occupied by the Association of Commerce is about 200 feet square, and provides for the various executive offices and bureaus, a directors' room, and an auditorium which will seat 500 people. The space was planned by the Association of Commerce with a view to meeting its needs and facilitating its operations. The Association has a separate street entrance, and the Athletic Club has an entrance around the corner on the other street. The Association is not in any way officially interested in the club life carried on in the rest of the building, and the Athletic Club, on the other

THE HOME OF THE ADRIAN, MICH., CHAMBER OF COMMERCE, THE GIFT OF A FORMER CITIZEN

THE BUILDING WHICH HOUSES THE MILWAUKEE ASSOCIATION OF COMMERCE

hand, is not concerned in the more serious labors and activities of the Association. The majority of the Association's members are also members of the Athletic Club, and the convenience of having the club facilities so accessible is very much appreciated. The arrangement has been in force for over a year and it has worked out most satisfactorily.

The Athletic Club itself is modern in every respect, with its attractive dining-rooms, lounge, reading and rest rooms, billiard- and pool-rooms, plunge, bowling-alley, athletic department, bedrooms, barber shop, and ladies' department. The Club serves luncheons at a stipulated rate for the Association of Commerce in the auditorium and in the private dining-rooms whenever the service is required.

* * * *

Portland, Ore.—The total cost of the eight-story building occupied by the Portland Chamber of Commerce was $453,757 (real estate, $100,375.80; building, $274,081.20; furniture and equipment, $79,300). Its erection was financed by the formation of the Portland Commercial Club Building Association, which issued a series of 6 per cent 30-year bonds to cover the cost of the lot and building. The Association leased the building to the Portland Commercial Club (now consolidated with the Chamber of Commerce), with the understanding that the Commercial Club operate the building, pay all taxes, interest on the bonds, etc., and create a sinking fund for the retirement of the bonds, the title to be vested in the Commercial Club when all the requirements of the lease had been fulfilled.

The Chamber of Commerce occupies the sixth, seventh and eighth floors of the building, a total of about 30,000 square feet of space. The other five floors are rented. Among the tenants are several organizations whose work is allied with that of the Chamber of Commerce, viz., the Portland Rotary Club, the Portland Ad Club, the Portland Automobile Club, the Home Industry League, the Oregon State Chamber of Commerce, and the Employers' Association. One-half of the ground floor is occupied by the State Exhibit Commission for display purposes.

The executive offices of the Chamber of Commerce are on the sixth floor. These include the offices of the Executive Secretary, the Trade and Commerce Department, the Industries Department, the Publicity Department, and the Farm Help Bureau. There is also a billiard-room on this floor. On the seventh floor are the lounging-room and library, the offices of the accounting department, the membership department, the Oregon Development Bureau the check-room, the barber shop, and the ladies' parlor. On the eighth floor is the restaurant, which includes the main dining-room, four private dining-rooms, and the kitchen. The private dining-rooms are used for committee rooms.

It will be seen that ample facilities are provided for the social life of the members. The building does not contain a regular auditorium, but the dining-room and the lounging-room, each of which measures 50 x 100 feet, are used as assembly halls, and they are in frequent demand for meetings of all kinds. In fact, practically all the local civic organizations take advantage of the facilities afforded by the Chamber of Commerce for meeting purposes.

No regular entertainment fund is maintained by the organization. The expense of the entertainment that is extended to the visitors to Portland is paid out of the general fund.

* * * *

Cincinnati, Ohio.—The Cincinnati Chamber of Commerce occupies the second and third floors of the 28-story building which was erected and is owned by the Union Life Insurance Company. The Chamber owns the lot, valued at $600,000, on which the building stands. The interest on this $600,000 gives the Chamber free rental of its two floors, including light and heat, and an annual income of $7,500. The contract provides that at the end of any ten-year period, the lessor will pay the Chamber of Commerce $600,000 upon the latter's vacating the premises.

Two classes of membership are provided for by the Cincinnati Chamber of Commerce,—property-holding and non-property-holding, both paying the same dues of $25 a year. The property-holding member surrenders his equity in the real estate leasehold when he defaults in paying his dues.

THE OREGON BUILDING, CONTAINING THE OFFICES OF THE PORTLAND CHAMBER OF COMMERCE, WHICH OPERATES THE BUILDING

THE HOME OF THE BILLINGS-MIDLAND CLUB, OF BILLINGS, MONT.

The private offices of the President and the Executive Secretary, the general office of the staff, the Directors' room, and the rooms occupied by the Chamber's twelve departments are on the second floor. The exchange hall, which has a seating capacity of about 500, is also on this floor. The dining-rooms, which comprise one large room and four connecting rooms, occupy the third floor. The four smaller rooms are used for the holding of private committee or business group meetings. The dining-rooms provide the facilities for the social affairs conducted by the Chamber of Commerce. Money is appropriated for entertainment as needed.

* * * *

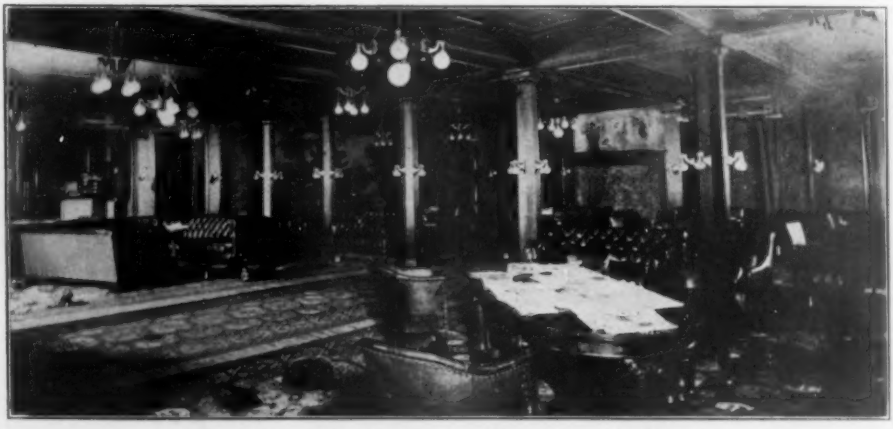
BILLINGS, MONT.—The Billings Chamber of Commerce reorganized itself into the Billings-Midland Club on January 1, 1919, at which time it moved into its new home, the three-story-and-basement building illustrated herewith. It was originally an Elks Temple and had attracted considerable attention on account of its magnificence. The organization serves as the commercial club for nearly two hundred little cities in the Billings territory, which is about 250 miles wide and 350 miles long. The city of Billings itself is situated on two transcontinental railway lines, which have numerous branches, and on two national highways. It is the natural trade and convention center for this immense territory, and the new quarters provide the much-needed facilities for entertaining the great number of business men who continually visit the city.

The building is located in the down-town district. It contains about 22,000 square feet of space. The elegant club dining-room and the kitchen occupy the basement. Two small rooms connected with the main dining-hall are used for committee luncheons and small, exclusive gatherings. The business offices are on the first floor. On this floor are also the main lobby, which is luxuriously furnished, reading-rooms and game rooms, including billiard- and pool-tables, and a ladies' parlor. The second floor contains sleeping rooms; and on the third, or top, floor is an auditorium seating 300 or 400 people, which is used as a convention hall, and for balls and other social functions conducted by the Club. The building with its furnishings cost the Billings-Midland Club $75,000.

The only outside organization housed in the building is the Yellowstone County Organization of World War Veterans, which occupies its space rental free. A slight revenue is obtained from the rental of the auditorium to the Elks and the Commercial Travelers' Association, which use the hall for their meetings.

The facilities for social and club life are infinite in a building of this character, and the widest possible use is made of them. The building also constitutes a real community center. Weekly luncheons for the Club's members are held in the dining-room, and smokers and social functions, including the Club dances, are frequently held on the lobby floor and on the top floor.

The Club maintains an entertainment fund, which is appropriated regularly from the organization's general funds.



THE MAIN LOBBY OF THE BILLINGS-MIDLAND CLUB

Elmira, N. Y.—The two-story frame building herewith illustrated has been leased for a term of years by the Elmira Chamber of Commerce for its work. It was formerly a dwelling house, and was completely renovated and repaired by the Chamber at an expense of $2,100. Everything is as bright and attractive as new paper and fresh paint can make it. The lower floor is used for the executive offices of the Chamber of Commerce, which comprise a general business office, the Secretary's private office, the office of the Farm Bureau, the reception room, and another room used for general office work. On the upper floor is an assembly room that will seat 85 people. This is available for meetings of the Farm Bureau when desired. The Red Cross maintains an office on this floor, and there are two other rooms not yet in use, also lavatories for men and women.

With the exception of the space used by the Chemung County Farm Bureau and the Elmira Chapter of the American Red Cross, the Chamber uses the entire building. It makes no charge to those organizations for the space they occupy. They were given office room as a part of the plan to make the building a civic and social center, and other civic organizations will be housed in it later on. The Chamber also hopes later to open a small restaurant in the building as another part of that plan.

The Chamber of Commerce headquarters and the machinery of the Secretary's office are open to the use of other civic organizations at all times. The assembly room is being used constantly for committee meetings of other civic and commercial bodies. That room will not accommodate large gatherings, however, and the Chamber uses the assembly chamber in the City Hall for forum meetings and other large gatherings.

THE BUILDING WHICH IS LEASED BY THE ELMIRA, N. Y., CHAMBER OF COMMERCE

"Spruce Up"

By Colonel Arthur Woods

Assistant to the Secretary of War

Now that the war is over and the army is being demobilized at unusual speed, a reaction has set in. From a period of great activity we have come to a period of inertia. In many instances there is a reluctance to make needed improvements, to pave streets, to renovate city halls, fire stations, and water-works, to construct new parks, or any of the other numerous municipal improvements that have long been needed and the construction of which has been prevented by the greater need of war-time production. Materials and labor seem high. Perhaps prices may fall. The official and the private individual may say to themselves that "next year is as good a time as this for such construction." But is it?

The beneficial results of an immediate and widespread resumption of public and private improvements will be incalculable. While the paving of a single street may not affect the labor situation, the paving of a thousand streets means a call to labor in the gravel pits, in the machine shops, and in the road oil plants, to say nothing of the labor required to do the work itself. Such municipal activities likewise create a demand for labor in the quarries, in the mines, in the forests and on the railroads. If one storekeeper orders a few new fixtures, it means nothing; if a thousand municipal purchasing agents order new material and new fixtures for cleaning up and sprucing up streets, fire stations, water-works, etc., it means that machinery, lumber, glass, wood, paint and other materials in large quantities will be required to supply the needs.

"Spruce up!" Now is the time to begin.

Automobile Accidents—Their Cause and Prevention

By W. Bruce Cobb

City Magistrate and Associate Magistrate in the Traffic Court, New York City

IN 1913 the New York Court of Appeals, in a celebrated automobile case, wrote as follows: "That the motor vehicle, on account of its great size and weight, of its great power and of the great speed which it is capable of attaining, creates, *unless managed by careful and competent operators,* a most serious danger, both to other travelers on the highway and to the occupants of the vehicles themselves, is too clearly a matter of common knowledge to justify discussion."

In discussing the motor vehicle traffic problem in a recent automobile magazine, a writer commented on the fact that only 679 people were killed in New York City in 1918 as compared with 714 in 1917, 644 in 1916 and 659 in 1915. He then congratulates the police in holding the number of fatalities so well in check. But he does not say that this toll of human life is as low as it can be made nor that it is not all too many for us to be smugly complacent over. Especially is this so when we find that a total of 13,603 were injured in 1918. If we add to these totals the figures in other cities large and small all over the country, are we not moved to ask ourselves if we cannot not only keep in check but reduce the tragic list? In other words, are we doing all we can in every direction? It is not only a problem in policing, but in analysis of causes and in finding a remedy.

Automobile Not Alone to Blame

In the above quotation the Court of Appeals does not mean to suggest, nor, in fact, does any thinking person believe, that because the automobile furnishes the striking force that it is to bear all the blame. We must apportion the blame and apply for a remedy, not in one but in many directions.

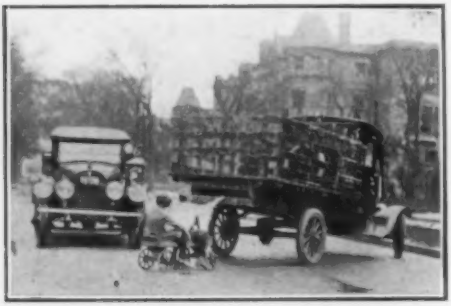
Street accidents existed before the automobile, and the advent of the motor vehicle in great numbers only complicated the hitherto existing situation. Pedestrians, horses and wagons, congestion of population, size and layout of streets, volume of traffic in given directions, or to and from common centers—these and many other elements are to be reckoned with.

Relative Rights to Highway

At the outset, let us approach the situation in the historical order of development of locomotion, first the man on foot, then the horse-drawn vehicle, and lastly the self-propelled vehicle, whether on tracks or not.

The foot-passenger still has a legal right to the highway, theoretically equal to that of the vehicle, but woe betide him if he seeks to assert that right in some localities, either urban or rural. Such rights are reciprocal, and to be carefully balanced one against the other according to the circumstances that prevail at the time. But this does not mean that a pedestrian should not in all common sense give way to a large vehicle on the highway, especially if he elects to cross between blocks in a city and not at the crosswalks. But if he does, this only casts on him a burden of greater care from a legal viewpoint. It does not license the motorist or horse driver to omit ordinary prudence and calmly to run him down.

If the pedestrians were at their peril confined to the street corners or certain designated crossings, it might tend to give selfish drivers too great a sense of proprietorship in the highway, not only in small, but large communities. The implied freedom from responsibility on the part of the driver would undoubtedly be misused. Many accidents to pedestrians, particularly to children, are prevented and preventable by the realization of drivers, whether of motor vehicles or not, that some vigilance must be exercised even toward the person who darts obliquely across a crowded thorofare. Especially should this apply to crowded streets and to the use of all streets by the infirm, aged or deaf. Nevertheless, there are certain pedestrian uses of the highway that should be discouraged.



THE WRONG KIND OF TRUCK TRAILER

Streets Unfit for Playground Uses

As a playground for large or small children, even an infrequently used street is not a success. One gentleman, evidently a motorist, recently suggested to me that all parents who let their children play in the street should be fined. If this were done there would not be police enough to make all the arrests or courts enough to impose and collect all the fines. Moreover, it would not be fair until we provide enough playgrounds reasonably convenient to the children's homes, especially those of the poor in our large cities. Much has been done in this direction by parks, recreation centers and blocks roped off at certain hours, but not enough to lessen the peril to any great extent. What heart is so hard as not to freeze with terror at striking a little child, and what accident is at times so difficult to avoid?

No Supervision of Horse-drawn Vehicles

The next user of the highway in order of development is the horse-drawn vehicle. As to this, it is a curious fact that almost anyone is allowed to drive one, especially a small delivery vehicle. In many places small boys do so, tho in other places they must attain the dignity of sixteen years. Horse drivers may be illiterate, speak no English, have no training, know nothing of horses or rules of the road; they may be deaf, dumb, blind, crazy or drunk; and nothing is to deter them from freely using even the most congested highways in our largest cities. This is wrong and should be regulated, since I know that the unfit drivers of horse-drawn vehicles contribute very definitely to accidents both to pedestrians and to automobiles, as well as to other horse-drawn vehicles and to trolley cars. Such persons as well as drivers of automobiles should undergo some sort of selection, be licensed and subject to some sort of control, at least in our large centers of population.

AN INSECURE SEAT—INDICATING A PROBABLE FALL

The Street Cars' Qualified Right of Way

So far as concerns the next user of the highway, the trolley car, confined as it is to rails and with powerful brakes to control and a precious freight of probable suitors for damages, it, too, comes in for some share of blame. In New York there is no law to restrain it and nothing to prevent its reckless operation generally, so far as any criminal statutes or ordinances play any part, unless someone is killed.

Motormen must not only be adequately trained but be made to understand that a qualified right of way because on rails is not to be abused, and that where there are traffic policemen they are to obey their directions scrupulously. Again, in approaching street corners the greatest vigilance is necessary, and interurban cars should moderate their propensity to go fast except where they can do so with real safety—never in the city limits.

The Problem of the Automobile

Finally we come to the lord of the highway itself—that miracle of many shapes and forms—the automobile. At the outset let me voice my faith in the great mass of motorists—chauffeurs and operators—who, after all, represent the great mass of mankind, and therefore number among them good, bad and indifferent—but mostly good. Just as there is the fool that rocks the boat, so there is the idiot who does stunts in an automobile, everything from speeding about in a gaudily painted pseudo-racer to trick

driving with one hand, in traffic.

But most of all in this mass of motorists lurk those who, for one reason or another, whether mental, physical, moral or temperamental, are incompetent to drive. These include the persons who are grossly illiterate, reckless, habitual criminals, drug addicts, inebriates (chronic or occasional), feeble-minded or partly insane, deaf, of defective vision, over-excitable or nervous, and untrained.

Examination Needed Prior to License

In few states are such persons even partly sifted out by examination or prevented from driving even when their unfitness is discovered, often as the result of some shocking accident. Such examinations should extend to operators as well as to chauffeurs, and should include reasonable investigation or certification as to the applicant's character and physical and mental condition; tests as to skill and elementary mechanical knowledge of the car to be driven; a knowledge of rules of the road and of the laws and ordinances affecting the community where the applicant is to be licensed.

Safety First Campaigns Essential

Having done this, there must be a campaign of education which must emphasize the most common causes of accident. First, of course, speeding is to be considered; for it is axiomatic that the greater the speed, the greater the lack of control or ability to stop quickly or maneuver in emergency.

Next let the necessity for caution at intersecting streets be observed, since my experience in handling thousands of cases indicates this as a most fertile source of accident, especially to other vehicles. It is coming to be the rule that a driver approaching the intersection of a street or public road shall grant the right of way at such intersection to any vehicle approaching from his right. In some communities a driver on a main road or artery of traffic has such right of way over those approaching from side streets or roads. In New York City, where nearly all the main streets run north and south, this has found expression in the rule that all north- or south-bound traffic shall have the right of way over the east- or west-bound traffic.

Turning corners quickly or improperly,

CHILDREN MUST PLAY, BUT THE STREET IS NOT THE PROPER PLACE

especially without a visible or audible signal, is fraught with peril both to pedestrians and vehicles. Then, of course, other vehicles must be passed to the left, except that street cars must be passed to the right and far enough away not to jeopardize passengers seeking to board them.

It would seem unnecessary to urge, especially on city streets, that drivers should keep to the right, but in New York City it is one of the requirements disregarded with apparent frequency in the feverish haste to get thru traffic, especially around street cars.

Then there is the use of the horn. All freak horns, especially those that frighten or startle, should be sternly discouraged. Horns should be blown always when safety to one's self or to others requires, but not incessantly.

Contributing Causes of Accident

Finally, indirect or contributing causes must always be considered by prudent drivers. These include weather conditions, such

BALL PLAYING IN THE STREETS INVITES ACCIDENT

as wind, rain, fog, mist and sleet, as affecting both the vision and the condition of the road. There is a condition of the road as to material, state of repair, car tracks, gradient, curves; also lighting both of the automobile and of the street. Again, there are mechanical causes that contribute, such as poor brakes; lack of tire chains, especially with certain types of tires; length or shortness of wheel base; weight of car in relation to its speed; and a host of others.

Thoughtless drivers include both the novice and the experienced. Driving by novices should be strictly regulated and allowed only when the learner is accompanied by an experienced person. Young people are often lacking in consideration and seem to have no sense of their responsibility. Students, delivery boys and the like are common illustrations. I have even seen a young matron, on a country road, with a "flivver" load of small children, burning up the miles, oblivious of hops and bumps, with the children complacently hanging over the back seat.

Carelessness Away From Home

Let me comment on the tendency of many drivers to "let loose" when out of their own bailiwick. This happens only too often when a city driver gets out into the country, and often into another state, beyond the fear and control of his own strict laws and policing.

On the other hand, the rural driver with open and more or less unfrequented roads, is often prone to throw rules of safety to the winds, especially as to turning, coming out of intersecting roads and the like. Further, a prudent driver, used to the country, ofter becomes helpless and confused when subjected to the intricacies and emergencies of congested city traffic.

In conclusion, let me lament the road hog who speeds by spurts, passes when and how he can the other vehicles, and generally selfishly ignores the rights and safety of others. And note it well that he is the first to loudly denounce others whenever an accident or trouble arises and invariably essays to bluff out the situation.

As to remedies, beyond proper licensing, strict enforcement of law must be required, not only by police and constables, but on the direct complaint of decent motorists and citizens. Most flagrant violations occur beyond the eye of the police. Reliable records should always be kept of previous offenders.

The Knight-Wheelock Bill

The recent enactment into law of the so-called Traffic Court Conference bill known as the Knight-Wheelock bill, is a notable triumph for the advocates of safer streets in New York City. Tho the bill was considerably altered from the original draft in its progress thru the Legislature, especially in confirming the licensing and examination of operators in New York City as opposed to the whole state, it is none the less the most progressive piece of automobile legislation in New York since 1910.

As in Massachusetts, Connecticut, New Jersey and Maryland, an operator or owner, like a chauffeur, must submit to a qualifying examination. Experience shows that the theory that because a man is responsible enough to own a car he will therefore run it carefully has signally failed. Such immunity to owners and their families is an invitation to the inexperienced and the reckless, and the absence of a license means that the authorities, by not being able to discipline the driver of it if he prove unfit, have only the hold over him that results from actual conviction and punishment for specific violations of law.

The Knight-Wheelock bill facilitates the suspension and revocation of licenses of operators for cause. It also gives the Secretary of State ample power to conduct a sufficient examination and road test, and to ascertain the applicant's character, habits and physical fitness. It classes false statements and deceits in securing a license as an offense severely punishable. Further, a person desiring to learn can do so only under a permit issued under suitable regulations and only when accompanied by an experienced driver who becomes jointly liable with him for any violations of law liable with him for any violations of law.

It is to be earnestly hoped that not only will the Knight-Wheelock bill be made state-wide in New York, but that the progressive spirit represented thereby and by the laws of Massachusetts, Connecticut, New Jersey and Maryland may be extended and made nation-wide. In fact, there should be a carefully drawn motor vehicle and traffic law uniform in all states, but still leaving localities with special problems free to make necessary local rules.

Uniform Report Blanks for Illinois Fire Chiefs

Standard Record Book and Inspection Forms Distributed by State Fire Marshal Contain Valuable Suggestions for Local Use

FOR the purpose of having on file in the various communities of Illinois a system of records which will be of the greatest aid in the work of fire prevention, and in order, also, to place coöperation between state and local fire authorities on the most systematic and effective basis possible, State Fire Marshal John G. Gamber has devised a "Yearly Record Book" for fire chiefs, which has been distributed thru the state.

The main purpose of the book is to classify fires as to cause and occupancy as they occur, and thus make possible the keeping of an up-to-the-minute summary. This is accomplished by the use of two forms, one for classifying fires according to cause and the other according to occupancy. The "Cause" sheet or form lists all possible causes of fires under twenty-eight headings. A space is left after each heading. When a fire occurs, the local chief places a cross in the space after the proper heading. Thus a running summary is kept at all times. The sum total of these crosses gives the summary to date at any given time. If the local chief is in doubt as to the proper classification, he may find it in a moment by consulting an extensive index at the back of the book. In the same manner the summary as to occupancy is kept on the "Occupancy" sheet or form. Forty classes of buildings and fourteen classes of property other than buildings are listed.

As a result of this system, if at any time any cause is producing an undue number of fires, or if there are too many fires in any class of property, the fact shows up automatically. It is as a warning signal to the local chief that certain conditions require prompt attention. It enables the State Fire Marshal at the end of each year, or at any time he may desire during the year, to know in just what direction fire prevention efforts may most effectively be applied.

The system insures ease, simplicity and accuracy in record-keeping, plus state-wide uniformity, and there is no delay in making a classification summary when called for.

Fire Marshal Gamber has also inaug-

CAUSE	
1.—Chimneys, Flues, Cupolas and Stacks, overheated or defective	
2.—Conflagrations	
3.—Electricity (except electric irons and similar small devices)	
4.—Explosions	
5.—Exposure	
6.—Fireworks, Fire Crackers, Balloons, etc.	
7.—Friction, Sparks occasioned by running machinery	
8.—Gas—Natural and Artificial	
9.—Hot Ashes and Coals—Open Fires	
10.—Hot Grease, Oil, Tar, Wax, Asphalt, (ignition of)	
11.—Hot Irons, including electrical devices	
12.—Incendiarism	
13.—Lightning—buildings rodded	
14.—Lightning—buildings not rodded	
15.—Matches—Smoking	
16.—Miscellaneous—Cause known, but not classified (for unknown see No. 27)	
18.—Open Lights	
19.—Petroleum and its products	
20.—Rubbish and Litter	
22.—Sparks—Arising from combustion (other than 23)	
23.—Sparks—On roofs	
24.—Spontaneous Combustion	
25.—Steam and Hot Water Pipes	
26.—Stoves, Furnaces, Boilers and their Pipes	
27.—Unknown	
28.—Unknown origin, but investigation important	

LEFT-HAND PORTION OF PAGE FOR RECORDING THE NUMBER OF FIRES IN A CITY, CLASSIFIED ACCORDING TO CAUSE

DEPARTMENT OF TRADE AND COMMERCE

DIVISION OF FIRE PREVENTION

Classification of the Number of Fires in the City of

Listed According to Property Destroyed for the Year . . . . .

CLASS OF PROPERTY.	No.	CLASS OF PROPERTY.	No.
1.—Apt. Houses, Flats and Rooming Houses		30.—Restaurants	
2.—Amphitheatres, Grand Stand, etc.		31.—Saloons	
3.—Bakeries		32.—Sheds	
4.—Barber Shops		33.—Smoke Houses	
5.—Barns and Stables (Not Liveries)		34.—Silos	
6.—Churches		35.—Stores	
7.—Depots, Stations, Waiting Rooms, etc.		36.—Shops (Carpenter, Blacksmith, etc.)	
8.—Dry Cleaning Establishments		37.—Schools, Colleges, Seminaries, etc.)	
9.—Dry Houses, Kilns, Rooms, etc.		38.—Theatres and Motion Picture Houses	
10.—Dwellings		39.—Warehouses	
11.—Elevators and Grain Warehouses		40.—Miscellaneous	
12.—Factories		**FIRES OTHER THAN BUILDINGS.**	
13.—Foundries		1.—Automobiles	
14.—Garages		2.—Boats	
15.—Granaries		3.—Bridges	
16.—Green Houses		4.—Cars, (Railway) (Electric) etc	
17.—Halls, (Lodge) (Club) (Dance) (Public) etc.		5.—Docks, (Coal) etc.	
18.—Hotels and Boarding Houses		6.—Fences	
19.—Hospitals		7.—Grain and Hay	
20.—Ice Houses		8.—Junk Yards	
21.—Jails		9.—Lumber Yards	
22.—Laundries		10.—Tanks (Water), etc.	
23.—Liveries		11.—Tents	
24.—Mills (Flour)		12.—Threshing Outfits	
25.—Mills (Saw and Planing)		13.—Trestles	
26.—Office Buildings		14.—Wagons	
27.—Oil Houses			
28.—Photo Studios			
29.—Power Houses, Pump Houses & Eng Houses			

COMPLETE PAGE FOR RECORDING THE CLASSIFICATION OF NUMBER OF FIRES ACCORDING TO PROPERTY DESTROYED

urated a system of coöperating with local fire chiefs along inspection lines which is getting good results. Under the Illinois Fire Marshal's Act every local fire chief is ex-officio a deputy state fire marshal and as such is given broad powers in inspecting and ordering the removal of fire hazard conditions. For use in their inspection work, local chiefs are supplied with uniform official inspection blanks, bearing the signature of the State Fire Marshal and providing a space for the signature of the local chief. Thus the authority of the state of Illinois is placed back of every order served for the removal of fire hazard conditions. This not only increases the zeal of the local chiefs, but also has a strong effect upon the person served with the notice.

The orders are issued in triplicate. One is given to the person served, one is kept by the local chief and one goes to the State Fire Marshal. The last-named gives each order the same attention as one served by a regular deputy, files it for later rechecking and gives the local chief all necessary assistance to enforce compliance.

Thru the courtesy of John G. Gamber, State Fire Marshal, Springfield, Ill., THE AMERICAN CITY is able to offer to its readers complete sample copies of the two forms reproduced with this article, as well as copies of the "Order for the Removal of a Fire Hazard Condition."

More Municipal Comfort Stations Needed

PUBLIC comfort stations in Europe are as much a part of the community service as pavements and street lighting. They are built by city and town administrations and located not merely in parks but on the streets, under sidewalks and public squares, with proper provision for both sexes, and are kept clean by attendants. In contrast, the history of the public comfort station in this country shows that the appreciation of the need of such institutions has grown very slowly. In many cities of the United States public comfort stations are located only at great distances from each other and in inaccessible places, and often with no provision whatever for maintaining them in a sanitary condition.

Municipal officials thruout this country must awake to the new problem confronting them. With the abolishment of the saloons, which have provided most of the comfort stations for the men of the American community, there comes a great need for the immediate and general installation of such accommodations. There should be no such delay as in the case of one comfort station in New York City, which was built to serve a district at least a mile square with many thousands of people. This station was fourteen months in building, and four months more elapsed before it was opened to the public.

American communities must undertake immediately to provide satisfactory public conveniences as a substitute for the accommodations of the saloon. Stations, with attendants, should be provided for each sex, inasmuch as most of the comfort stations for women in our cities are maintained by hotels and department stores. Clean accommodations must be established wherever needed, and could probably be made partly self-supporting thru the addition of pay shower baths, sale privileges for merchandise, etc. Many of the comfort stations for women in stores have developed into veritable clubs for customers, with parlors, rest rooms, information booths, and writing rooms. It would probably be difficult for a municipality to develop such elaborate facilities; however, departments of health and public safety must seriously consider the immediate provision of a sufficient number of public comfort stations to fully take care of the situation.

San Francisco has already appreciated the necessity for the establishment of more comfort stations, and in the budget which is under preparation an appropriation of about $50,000 is asked for this purpose. M. M. O'Shaughnessy, City Engineer, who asked for the appropriation, sought to secure money for only ten stations to begin with, realizing that it would be impossible to obtain money immediately for all that are needed and must eventually be built in San Francisco.

Every American municipality should follow the example set by San Francisco and secure an immediate appropriation for the construction of public comfort stations, particularly in the most congested districts. Additional stations should be erected as fast as money becomes available.

One of the World's Great Public Playgrounds

How Point Defiance Park, Tacoma, Wash., Is Serving the Public

By George Lewis Gower
Secretary, Metropolitan Park District, Tacoma, Wash.

POINT DEFIANCE PARK is a high, wooded, triangular peninsula jutting out into the waters of Puget Sound. It rises above the water nearly 100 feet at the lowest level and 315 feet at the highest level. Its water faces rise abruptly at sharp angles from the three miles of salt water beaches, and from the high levels the views in every direction are astonishing and inspiring. To the east, the snow-capped peaks of the Cascade Ridge, with Mount Tacoma (14,408 feet) as the central figure, stand out distinctly. To the west, the Olympic Range, also snow-capped, with Mount Olympus (10,000 feet) as the highest, is even more distinctly visible. And between, a beautiful panorama of forest, field, island and sea meets the eye.

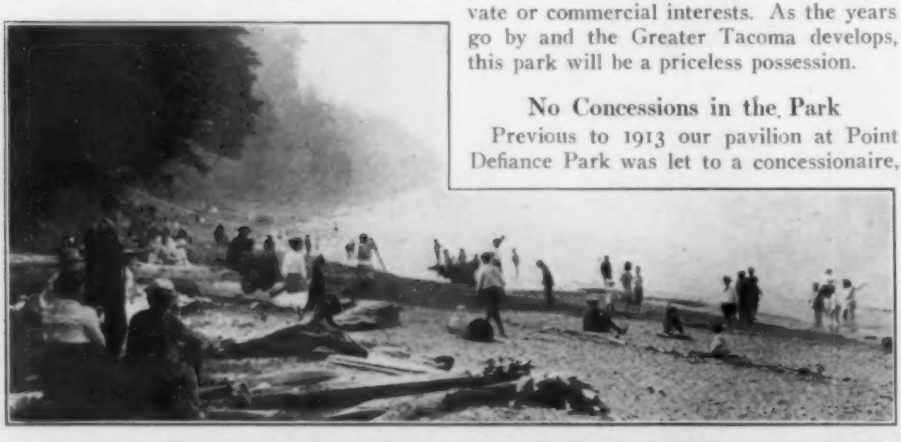
The park area of 638 acres is covered with its ancient natural forest, with trees reaching up 200 feet and frequently 30 feet in circumference. Thru these wonderful woods run seven miles of driveways and some ten miles of paths and trails, with partially cleared picnic ground areas at intervals. The Park Board's purpose is to preserve the forest in its natural state, with sufficient roads and trails to open it to public use and enjoyment.

In the southeast corner perhaps 150 acres are cleared and beautified for a modern park, with drives, paths, flowers, animal house, pheasantry, conservatories, corrals for buffalo, deer, elk, ostriches and other animals; pens for black and grizzly bears (above ground); a duck pond, a lake, and a great picnic ground, with acres of rolling lawns, as framework for them all. The city street railway runs to a beautiful brick station (costing $33,000) built on Japanese lines, near the center of this modern portion. The fare is seven cents for distances up to fourteen miles, with free transfers all over the city.

This park was an old U. S. military reservation, which accounts for its escaping the axe of the pioneer and home builder, while still within the city limits. It was granted by act of Congress to the city of Tacoma for park purposes. Subsequent state grants of the shore rights completed the city's possession, and assured future protection from all encroachments by private or commercial interests. As the years go by and the Greater Tacoma develops, this park will be a priceless possession.

No Concessions in the Park

Previous to 1913 our pavilion at Point Defiance Park was let to a concessionaire,



A TYPICAL BEACH SCENE ON THE EAST SHORE OF POINT DEFIANCE PARK, TACOMA, WASH. —ALMOST ANY SUMMER DAY—ABOUT 100 YARDS NORTH OF THE PAVILION WHARF

ONE OF SEVERAL CONCRETE "OVENS" IN POINT DEFIANCE PARK, BUILT FOR THE CONVENIENCE OF PICNICKERS AND TO HELP WARD OFF THE DANGER OF FOREST FIRES CAUSED BY CARELESSNESS

and we experienced all the inconveniences of high charges, indifferent service and public dissatisfaction. On the expiration of that concession, the Board of Park Commissioners took the affair into its own hands. A salaried manager was employed, who, while being always under the immediate direction of the Board, was given a pretty free hand to demonstrate the possibilities of the service and his ability to handle them. To maintain his interest still further, he was given the opportunity to earn a bonus, which might reach a maximum of $50 a month in addition to his salary, and which could be earned only by showing a net profit over all expenses and depreciation charges. In such case this net profit is divided with him, up to the maximum stated. For example, if the net profit for the year is $300, he gets $150. If it should be $1,500 he would get his maximum of $600. He is allowed to purchase—that is, issue requisitions for—all merchandise which he sells, but he is under the Board's direction even in this, should the Board see cause to direct. He is not allowed to pay out any money whatever. All his receipts go into cash registers, and are brought in to the Secretary, who receipts to him for them. The Secretary receives, audits and pays all the bills.

This system was in operation from February, 1913, to April 1, 1917—a time sufficiently long to fairly demonstrate the wisdom of the plan. A later Board abolished the bonus, and a straight monthly salary is now paid, and prices have been increased.

Business in 1917 was: gross receipts of pavilion, $16,540.10; of boat house, $7,095.90; total, $23,636.00; net profit, $7,773.60. In 1918, pavilion, $27,967.35; boat house, $10,636.95; total, $38,604.30; net profit, $9,095.99.

If these figures seem to dispute a statement below as to moderate profits, the explanation is found in the fact that as membership in the Board changes from year to year, policies are liable to change also. And the existence of Camp Lewis, near Tacoma (where forty to fifty thousand men were in training, who, with their friends, thronged our parks last year), greatly increased our pavilion business. We do not expect such figures this year.

Park Accommodations

The pavilion is kept open every day in the year for the accommodation of visitors, rain or shine. The theory of the Board is that the pavilion exists to provide park enjoyment for the public, which supplies the funds thru taxation for the upkeep of the parks. As the pavilion activities and all other forms of commercialism in the parks, which number some thirty, are an essential part of the public enjoyment, the Board takes the ground that the public should be supplied with these at the least possible expense and with the best market quality. Hence it provides them itself, at prices

which show profit, but not robbery, and the public enthusiastically expresses its appreciation.

Our situation on Puget Sound enables us to make a feature of boating. The pavilion has one hundred and eighty boats, built to our own specifications, which are in great demand. Only lack of space, until we get our new pavilion, prevents us from adding largely to the number. Here the same price principle prevails. Boats (except on Sundays and holidays, when they are required for the general public and the all-day price is $1.50) are 75 cents per day, or 25 cents per hour. And we frequently have them all out, with a long waiting list. System is applied here. The renter signs his name to a numbered card, which is then stamped by a machine, showing time of departure, and placed in a clip on the wall corresponding in number with that of the boat taken out. When the boat returns, the card is stamped again, showing time elapsed and amount to pay, and is then started on its way to the Secretary, to be checked up with the cash turned in.

We have several picnic grounds, scattered thru the forest, provided with fireplaces, fuel, tables and seats, all of which are free to visitors. They can spread their edibles at the pavilion, if they prefer, on the same terms. The pavilion has a cafeteria, selling only sandwiches, pie and coffee, and has also ample space for the peanut, popcorn, ice cream, candy and general goods trade. We make a point of trying to supply anything wanted—fishing tackle, tennis balls and racquets, newspapers, "soft drinks," cigars and tobacco (but not cigarettes); in fact, if we haven't what is asked for, we try to have it the next time it is inquired for.

There are no peddlers, not even our own, going around the grounds, trying to make sales. Not even the photographers are allowed to ply their trade, tho everybody is allowed to take as many pictures as he likes for himself. We formerly maintained at Point Defiance Park a park photographer, also on salary, who was always on duty to supply any demands of the public for pictures. The demand was rather surprising, especially for the picnic parties. But that feature is now abolished. At the Masonic picnic one year there were over 2,200 registered names; at the G. A. R. picnic, over 600; and at the Farmers' Grange, over 400.

We formerly furnished an automobile service, at very moderate rates, either by time charges or for the five-mile forest drive, on which we carried some 5,000 passengers in 1916. That also has been abandoned.

An Organization Without Graft

Perhaps it is only fair to say that we are in a position—as most park people are not—where we can do as we feel best, uncontrolled by any outside authority. This Park District is an independent municipal corporation, levying its own taxes, and expending the resulting revenues, in the forum of its own conscience and judgment alone. There is absolutely no politics in it, nor any possibility of interference by anybody. The judgment of the Commissioners is final on any proposition of park government. The Board consists of five, holding office without pay for terms of five years, one change being made by election annually. There is not an employe in the service who is not directly responsible to the Board, nor one to whom it cannot say, "Take your coat and hop ashore," upon any failure of duty. And there is no appeal from that sentence. We have carefully built up a working force on these lines, based solely on efficiency. Many of our people have been with us ten years or more, and every foreman of parks has begun his work with us with pick and shovel, and worked his way up. Consequently we have comparatively few changes, and no politician comes near us with any requests to "give Jimmy a job." They realized long ago that "Jimmy" wasn't a factor with us.

And perhaps, for a last word, it might be interesting to know the grand total of the results of this general policy. I can only say that we have no bonds, nor interest-bearing obligations, no debts, save current monthly bills, which are paid on the 15th of each month, and a comfortable amount of cash on hand. Our simple budget is used first to keep up what we have in the way of parks, then spend the remainder—saving a margin for contingencies—in improvements. And with this the politicians have no concern. At present we have $28,000 of our pavilion rebuilding fund invested in Liberty bonds. We draw interest, not pay it.

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and practical value to others engaged in similar work. Photographs, plans, or other illustrative material, should accompany the articles whenever available.

MAYORS

Time-Saving Machinery for Tax Records

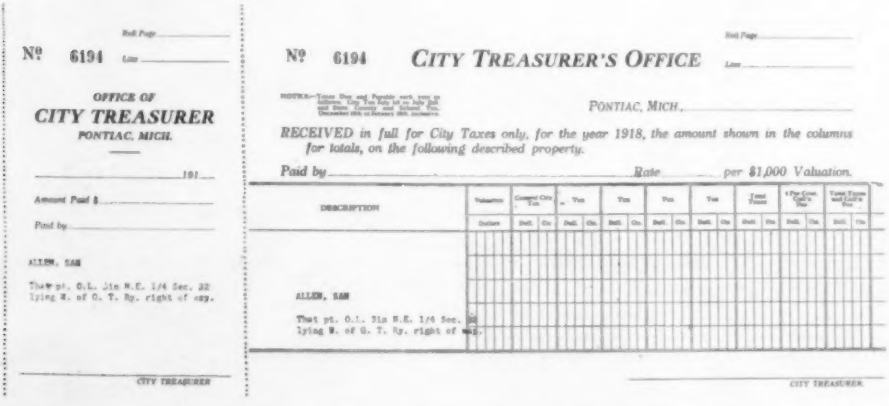
PONTIAC, MICH.—The city of Pontiac has recently established a time-saving method in connection with the issuance of tax rolls and tax receipts. We have about 15,000 descriptions in the city, including "metes and bounds" descriptions and recorded plats and additions. We have installed an addressograph and a graphotype, the latter being a machine for making the plates for use on the former. This work can be done by a girl. An intelligent operator should be able to make and assemble 300 plates per day. In making out tax rolls or tax receipts, an experienced girl can run them off at the rate of 10,000 per day. The saving in time, while a very considerable item, is not the most important factor. Descriptions on the assessment rolls, on the tax roll and on the tax receipt under this method are identical, and this in turn eliminates the possibility of errors in descriptions, which so often occur under the old long-hand method of writing tax records. We are more than satisfied with the new equipment.

F. G. ELY,
Mayor.

PARK DEPARTMENTS

A Combination Market and Playground

ST. PAUL, MINN.—This city has a rather unique institution in a combination market and recreation center established in the old First Swedish M. E. Church, which was leased by the city for the purpose. The plant is well fulfilling its purpose. During a single month about 10,000 persons



Roll Page ____
No. 6194 Line ____

OFFICE OF
CITY TREASURER
PONTIAC, MICH.

____ 191__

Amount Paid $ ____

Paid by ____

ALLEN, SAM

That pt. O.L. 31a N.E. 1/4 Sec. 22 lying W. of G. T. Ry. right of way.

CITY TREASURER

Roll Page ____
No. 6194 CITY TREASURER'S OFFICE Line ____

NOTICE—Taxes Due and Payable each year at Lansing, City Tax Due on July 1st and Dec. 1st and Delinquent December 15th and January 15th, inclusive.

PONTIAC, MICH. ____

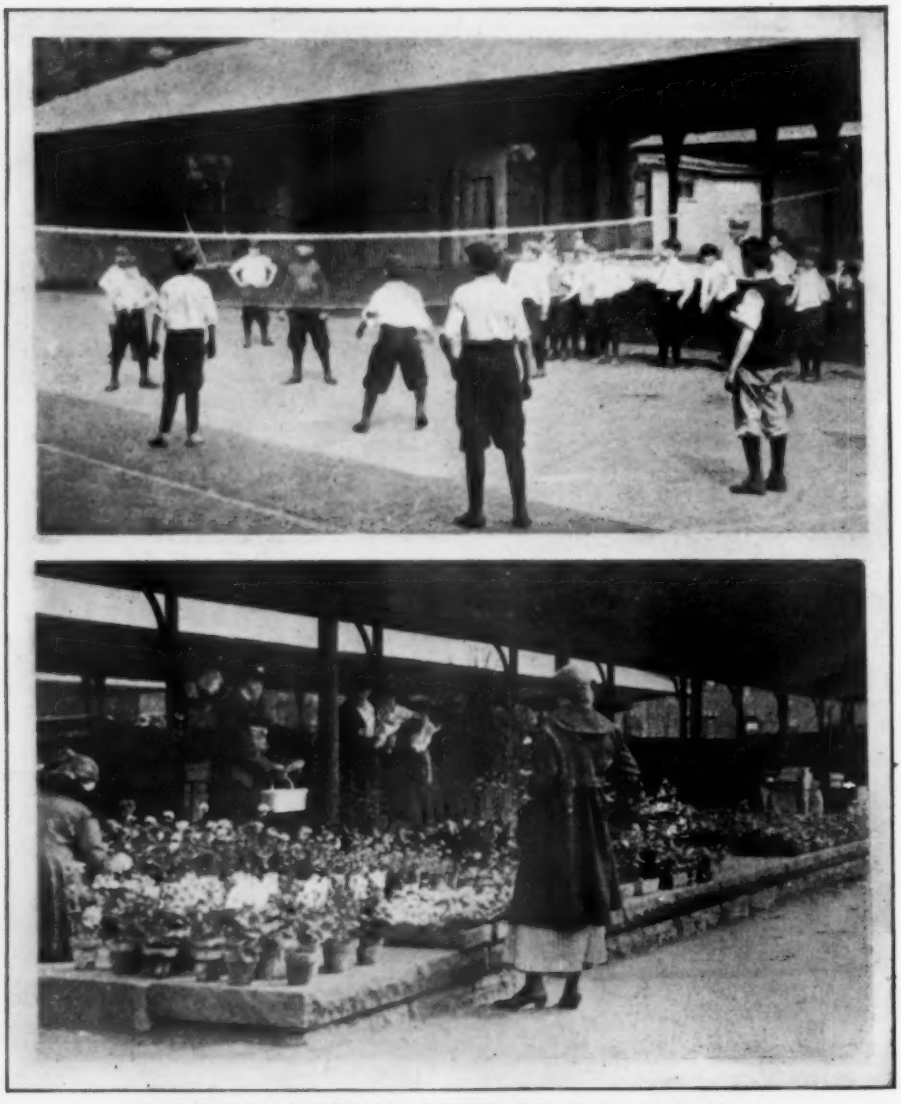
RECEIVED in full for City Taxes only, for the year 1918, the amount shown in the columns for totals, on the following described property.

Paid by ____ *Rate* ____ *per $1,000 Valuation.*

DESCRIPTION	Valuation	General City Tax	Tax	Tax	Tax	Tax	Total Taxes	4 Per Cent Paid in Adv.	Taxes Paid Less 4 Per C.
	Dollars	Dol. Cts.	Dol. Cts.	Dol. Cts.	Dol. Cts.	Dol. Cts.	Dol. Cts.	Dol. Cts.	Dol. Cts.
ALLEN, SAM That pt. O.L. 31a N.E. 1/4 Sec. 22 lying W. of G. T. Ry. right of way.									

CITY TREASURER

TAX RECEIPT USED BY THE CITY OF PONTIAC, MICH.



COMBINATION MARKET AND PLAYGROUND IN ST. PAUL, MINN.

attended its various activities, taking part in all forms of club work for boys and girls, calisthenics, and games, such as basket-ball, push-ball, etc. There are special hours for glee clubs and orchestras, and arrangements have been made to give individual instruction in music. We have hearty coöperation from the public library, which places about 100 books in this recreation center every two weeks.

As soon as spring approached we began to use the open market space for outside games and various playground activities. Under the market shed, there are demountable swings and teeters. These are taken down every night so that they may be out of the way of the market operation the following morning. The apparatus is set up again at one o'clock in the afternoon. The market center is located in the most congested part of the city, where Italians, Poles and Jews predominate. One

of the purposes of the undertaking is to assist in the assimilation of these people by Americanization methods and by teaching them lessons of cleanliness, honesty and good sportsmanship. The activities of the center are divided into literary work, reading circles, discussion groups, dramatics, dancing and singing lessons, community singing, sewing classes, children's games, paper cutting and other kindergarten teaching for little folks, with stereopticon lectures and moving picture shows. The photographs illustrate how the people are making use of the grounds, both as a market and as a recreation center.

ERNEST W. JOHNSON,
Commissioner of Parks and Playgrounds.

Taking Recreation to Outlying Sections

LOS ANGELES, CAL.—Several forces when acting in the same direction are likely to produce results. This has proved to be the fact in connection with the development of a neighborhood recreation center in an outlying district of the city of Los Angeles.

The people of the Glassell Park Community under the leadership of several representative women had attended far-distant municipal recreation centers and derived the usual benefits resulting from participation in what are known as "mothers' play clubs or classes." These women concluded the distance was too great to travel for that purpose, and upon conferring with representatives of the City Playground Department, the Public Library, and the Community Church, a scheme was evolved whereby the church property could be used, the library department would provide books, and the Playground Department would provide leadership for physical activity. This opened the way for the beginning and conduct of what is now known as "Glassell Park Community Center Association," a representative organization consisting of a council of twelve members, whose chief object is to work for the civic betterment of the community.

Three gymnastic or play clubs have been organized under the leadership of the City Playground Department—two for women and one for men. Other activities involving library, Red Cross and Boy Scouts are progressing nicely. At a later date the activities will be transferred to the neighborhood school, where a larger and more useful work will be accomplished.

This association in working for the best interests of the community has decided to be non-partisan and non-sectarian, and will exclude no one. The Playground Commission is ready to send trained leaders to other outlying districts to encourage the promotion of similar work, thus opening the way to bring the recreational benefits to the very door of scattered and distant communities.

C. B. RAITT,
Superintendent, Los Angeles Playground Department.

PUBLIC WELFARE - AND SERVICE -

Short Weight Prevented by New Ordinance

JOHNSTOWN, PA.—On October 29, 1918, the Council of the city of Johnstown passed what is known as the Triplicate Weighbill Ordinance to protect consumers from short weight. This enables people to determine by an authorized statement just how much coal has been delivered to them and how much they are paying for it.

From early in 1918 the inspector of Weights and Measures was showered with complaints from consumers who were receiving short weight in coal delivery. A thoro investigation of these complaints showed that they were well founded, and the matter was immediately taken up with the City Solicitor. As a result, the following ordinance was drawn up and passed by the Council, becoming effective November 8, 1918:

An Ordinance

Providing for the Weighing of All Coal Sold and Delivered in the City of Johnstown, and Imposing a Penalty for the Violation Thereof.

SECTION 1. Be it enacted and ordained by the Council of the city of Johnstown, Pa., and it is hereby enacted and ordained by the authority of the same that:

All coal sold and delivered in the city of Johnstown shall be weighed and sold by net weight. The person weighing the coal shall issue a triplicate weighbill; one weighbill to be kept at scales where coal is weighed, and two weighbills to be handed to the person delivering the coal, who shall leave one of said weighbills at the place where the coal is delivered. The weighbills shall have plainly

written or printed thereon the net weight of the coal, the name of the person, persons, company or corporation selling the coal, and the name and address of the person or persons to whom the coal is to be delivered.

Section 2. Any person or persons violating any of the provisions of this ordinance, upon conviction thereof before the Mayor or any alderman of said city, shall be sentenced to pay a fine of not less than five dollars ($5.00) or more than fifty ($50.00) and costs, and in default of payment of fine and costs, shall be sentenced to imprisonment in the city or county jail for a period of time not exceeding thirty (30) days.

By providing a triplicate weighbill, one copy of which is kept at the scales, one by the parties responsible for the delivery of the coal, and the third in the possession of the consumer, a complete record is made whereby all parties are protected against any fraudulent weighing or complaint.

Since the passage of this ordinance there has been practically no complaint of short weight, and such troubles seem to have been eliminated.

J. W. CROTZER,
Inspector of Weights and Measures.

POLICE DEPARTMENTS

School Lectures on Public Safety by Cleveland Policemen

Cleveland, Ohio.—In the regular course of police work in Cleveland the officers find that they are called upon to care for children at busy street crossings, at playgrounds and at every place in the city to which the small boy in his wanderings may go. This has made it necessary to develop an understanding between the officers and the children, so we decided to send the police to the schools; and in order to equip them, we organized a training school.

Officers and patrolmen of good personality, appearance and ability to speak in public are selected for this work in each precinct, and one of them is assigned to one or two school buildings, depending on the size of the buildings. The men who have been selected then meet at the police training school with the man in charge and members of the School Board. The subject to be taken up is discussed carefully, and each man is furnished with a copy of instructions which serves as a basis for his lectures at the school, altho he is also free to mention some of his personal experiences.

Arrangements are then made thru the School Board with principals of the various school buildings for the officers who are assigned to their buildings to call at a certain time and talk about a number of the rules. The talks last about ten minutes, until all the rules are gone over. Then the teachers are furnished with a copy of the instructions and they call the children's attention to them from time to time. As a result of our experience we suggest that a prize of a banner be offered to the building having the fewest number of accidents during the year, and also a medal to every child that prevents an accident.

A campaign of this kind is bound to bring good results in preventing accidents, not only to school children but to their parents as well, for the children naturally speak to their parents about these instructions. Such a campaign also has a tendency to bring the children closer to the men representing law and order, and this creates a feeling of trust and respect for our laws and the police officers, eliminating the feeling of fear of the laws and distrust of the men representing them which seems to exist in the minds of the foreign-born.

Some of the topics on which the officers talk to the children are included in the following extracts from the instructions furnished to the schools:

INSTRUCTIONS FOR SCHOOL CHILDREN

Traffic Warnings

Before crossing a street, stop and look both ways, first to the left (as danger will likely be nearer from that side) and then to the right. If the street is clear for at least half a block, then go ahead and cross the street quickly.

In crossing a street be sure to do so on the crosswalks and at no other point, for the reason that there is less danger there than at any other place. The law compels drivers of vehicles to drive across crosswalks slower and use more caution there than elsewhere.

When crossing a railroad, look both ways, and cross when you are signaled by the watchman to do so. He is paid to be on the lookout and prevent accidents. Never cross a railroad track when the gates are down. Stop, look and listen.

Never play in the streets that are used frequently by automobiles or other vehicles, because you are apt to bewilder the drivers, thus making them lose control of their vehicles, which would be dangerous not only to you but to others as well.

If you are standing in the street and see automobiles or other vehicles coming both ways, stand perfectly still and let the vehicles pass around you, because they are not likely to run over you if you do not move.

Never steal a ride on an automobile, street car or any other vehicle, because you are in danger of falling off and being injured or of being run over by another vehicle when you jump off. Stealing a ride is a very dangerous practice at all times and should never be indulged in.

Never throw a stone or any other missile at any vehicle, or, in fact, at anything, because you might injure someone, damage the vehicle or some other property, or cause the driver of the vehicle to lose control of it, which might result in a serious accident. For that reason the throwing of stones is against the law.

Never touch an automobile that is standing in the street unattended, or move any lever or blow the horn or even go near it, because you might release the brake, start the engine or do something else that would do some damage or cause a serious accident.

If you are playing in the street and see a vehicle approaching, get onto the sidewalk as quickly as you can and remain there until the vehicle has passed.

Never stand on the sidewalk close to the street when vehicles are passing close to the curb. That is always dangerous. Get as far away as possible from any passing vehicle.

Never play ball, use roller skates, coasters or other similar contrivances on the streets, particularly on streets frequented by automobiles or other vehicles, because it is very dangerous, not only to yourself but to the driver of the vehicle as well.

Never chase a ball, hoop or anything into the street without first looking and making sure that you are not in danger of being struck by some vehicle.

Do not attempt to get on or off a street car while it is in motion, and when alighting from it be sure to look around so that you do not jump in front of an automobile or some other vehicle and get injured. Do not stand in the street, but get to the nearest curb as soon as possible. Never walk around the rear of a street car without first making sure that another vehicle is not approaching from the other direction.

Do not play around railroad yards or on street car tracks. The city maintains playgrounds and other places of recreation. You will find competent instructors in charge, who will make you welcome and your visit a pleasant one.

Fire Prevention

Help to keep your house, yard and outbuildings clear of rubbish and inflammable material.

Do not start a bonfire near a fence, barn or house; never when the wind is blowing.

Never fill a lighted lamp.

Never use gasoline or other liquid which, when evaporating, causes a gas to form, to clean gloves, etc., in the house. Gasoline vapor is more deadly than dynamite.

Do not look for lost articles or a leak in the gas pipes with an open flame. And when the gas in the furnace blows out, open all the windows and doors before lighting.

Oily rags should never be kept around any building. They might cause a fire from spontaneous combustion.

Never start a fire with kerosene or gasoline.

Never hang clothes close to a grate or stove.

Do not heap up the grate and then go away and leave the fire.

Matches should never be left in clothes hanging in closets.

Never play or allow any one younger than yourself to play with matches, bonfires, or fires of any kind. One hundred and forty-eight children under five years of age were burned to death in Ohio in one year from this cause.

Use nothing but safety matches; they should be kept in a metal box and out of reach of young children. There were 209 fires in Ohio last year due to children and matches. Burned matches should be deposited in a metal box and not thrown on the floor.

If you smell gas in the house, do not strike a match, but open the doors and windows. If you smell smoke, investigate until you find the cause.

Water frozen in water pipes should never be thawed out with an open flame. Many fires have been caused by this practice.

GEORGE J. MATOWITZ,
Police Captain.

Light Cars Prove Economical in Police Work

LOUISVILLE, KY.—This Department has placed in service six Ford machines, which have taken the place of thirty-three horses and forty-four men; twenty-four of these men were mounted, and the other twenty were footmen. To operate the machines day and night, we use two men on each shift, making a total of twenty-four men. Twenty-four of the horses were used regularly on the beat, and it required nine extra horses to keep the beat filled. We also found that it required two extra Ford machines to keep the six machines running on their beats. A comparative statement of the work of the machines and the horses is as follows:

33 horses at $1.00 per day for 30 days....	$ 990.00
44 men at $3.50 per day for 30 days.....	4,620.00
	$5,610.00
6 machines averaging 210 gallons of gasoline per month.....	$ 315.00
24 men at $3.50 per day for 30 days.....	2,520.00
	$2,835.00

These figures show a saving of $2,775. From this saving must be deducted the cost of repairs, tires, etc. The cost of repairs, of course, will vary according to the men who operate the cars. When we first placed the cars in service, the chauffeurs we secured were not the best in the world, and consequently our repair bills were exceptionally large. However, as the men grew more proficient in the use of the cars, and by eternal vigilance on our part, we have gradually lowered the cost of repairs. We fully believe that the beats are patrolled as well, if not better, by the use of the machines than by the combined efforts of the footmen and the mounted men. The results of the change from horse and foot service to machine work have been gratifying from several points of view.

We have also installed a new semaphore as an experiment. Instead of having a pedestal resting on the ground, as did the old semaphore, this one is suspended from the overhead trolley wire. It is in the shape of a square, with "Go" on two sides and "Stop" on two sides, and it is operated by the traffic officer by means of a pole. One of the particular points of advantage of this semaphore is that it is above the tops of the street cars and we do not have the bother of sending a wagon to bring it in each evening. All that the traffic officer has to do is to take the pole, which is like a light fishing pole, into some corner store and leave it.

LUDLOW F. PETTY,
Chief of Police.

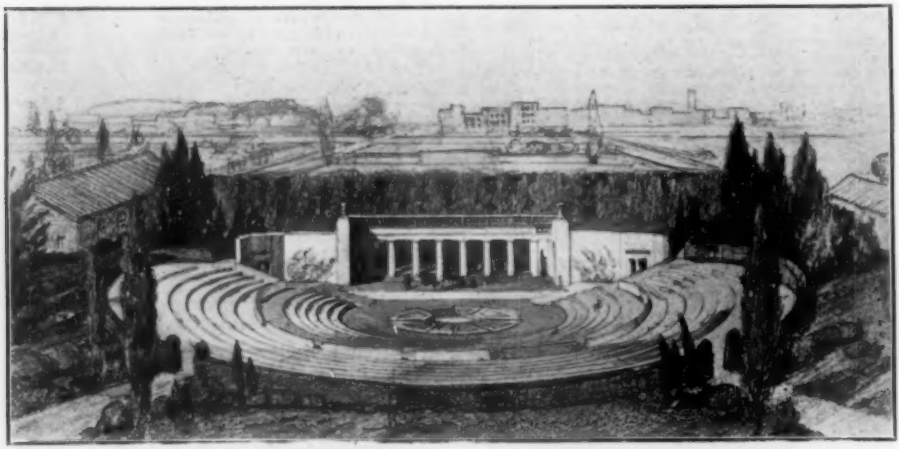
EDUCATION DEPARTMENTS

A Unique Memorial to Heroes

SANTA MONICA, CAL.—The monuments, obelisks and arches which have been erected in honor of American soldiers and sailors are expensive and imposing, but they serve no useful purpose. The Board of Education of the city of Santa Monica saw no reason why such memorials should not be both beautiful and useful. Accordingly, the Board asked the people to vote a bond issue of $30,000 to build a memorial open-air theater on the High School grounds, to be dedicated to the soldiers, sailors and marines who were enlisted in the Great War. At the election held May 20, the bonds were voted.

The High School grounds consist of fourteen acres, sloping gently toward the ocean from a hill which is crowned with a magnificent group of buildings. The memorial will be in the form of a Greek theater on the lower part of the hill, where it rises from the edge of a walk connecting the boys' and girls' gymnasiums. On one side of the walk will be the tennis courts, already in place; on the other side, the proscenium.

The new theater will have a seating capacity of 3,000, thus supplying a long-felt need for a public assembling place where large audiences can be brought together. It will rest in what is now the open part of the grounds at the foot of the hill, between tall and stately trees on the north and south sides of the grounds, and will be further banked up by trees and shrubs so that it will be protected on all sides from the wind.



PROPOSED MEMORIAL OPEN-AIR THEATER, SANTA MONICA HIGH SCHOOL, CAL.

It is expected that the structure will be completed by the middle of next November, and the Board of Education is already planning to dedicate it at Thanksgiving by a great historical pageant.

The accompanying drawing shows the theater as it will appear to a person looking down the hill from the Central High School building.

HORACE M. REBOK,
City Superintendent of Schools.

Many things must be carefully prepared, as carefully watched, and persistently pushed, by the man who will get any city public into and thru a great public improvement. Wearied, and worried, and hindered, he must never sleep, never be beaten, never desist. HORACE BUSHNELL.

Steel Paving Guards

The Results of Two Years' Experience in Philadelphia, Pa.

By Charles F. Puff, Jr.
Assistant Chief Engineer, Bureau of Highways, Philadelphia

FROM the day, not known to history, when man decided that an ordinary earth road was not sufficient to meet the traffic needs of his community, the problem of protecting the edges of the wearing surface has confronted the highway engineer.

Without entering into an extended academic discussion of this subject, we might tritely state that protection of the road edge is needed for the following reasons:

(1) Fraying due to lack of stability of the shoulder material, this in turn allowing the road to lose its correct cross-section
(2) Fraying due to frost
(3) Fraying due to inadequate drainage
(4) Fraying due to heavy and fast-moving traffic breaking the edges

This wearing surface in most cases has been held in place by earth or cinder shoulders compacted by a steam roller. Formerly traffic was both light and slow, and therefore the problem did not receive attention proportionate to its importance. Later on, rubble stones were placed along the sides of the improved portion of the roadway, and in a few cases this method combined the protection idea with that of drainage.

Subsequently, dressed granite blocks were used as runners or headers, but on account of the ever-increasing amount and speed of traffic this protection soon proved inadequate. The failure of this type was generally due to frost and cobbling.

With the advent of bituminous wearing surfaces, planks were used to some extent, but the cost of restoring planks exceeded the cost of the pavements.

Next we find concrete headers being constructed as an integral part of a concrete base. Then follows the concrete header made with a richer mix, and, still further, one with a steel-armored edge.

The two last-named types of road edge protection have done fairly well, but such extreme care and supervision are necessary for any success that engineers have ever been searching the horizon for something which would guarantee first-class results with a minimum amount of supervision. With this in view, the Bureau of Highways, Philadelphia, decided to test out the International steel road guard, invented and designed by M. William Godwin. The place selected for making the test was on Island Road at Lyons Avenue, in southwest Philadelphia. Island Road is the main artery of this district, which includes the United States Emergency Fleet's Hog Island Shipyard, the Remington Gun Works, the Baldwin Locomotive Works, Fort Mifflin, and the various other governmental and semi-governmental industries situated along the Delaware River between Philadelphia and Chester.

PAVING GUARD ALONG EDGE OF ISLAND ROAD IN SOUTHWEST PHILADELPHIA, PA.

Character of Paving

The paved portion of the roadway is 19 feet, and consists of 5 inches of concrete base on an old macadam base, 1 inch of asphalt binder and 1½ inches of asphalt wearing surface, with penetration macadam shoulders 2 feet wide, flanked by an electric street railway track on each side. The traffic consisted of loads upward of 20 tons per vehicle with relatively high speed. The amount of this traffic was enormous, and, while no census was taken at this point, a conservative estimate of traffic here during the war would be 700 tons per foot-width of road per day of 16 hours.

Lyons Avenue is one of the principal distributing country road arteries leading from Island Road, and therefore the paving guard received considerable traffic turning off at this point. The length of steel guard used was about 300 feet. In the other sections where steel guard was not used, concrete headers were constructed.

Experiments with the Steel Guard

The guard consisted of a 2 x 2 x ¼-inch steel angle with 1-inch anchors taken off each 18 inches. These angles were clamped to the outside form of the concrete base and set from ⅛- to ¼-inch below the grade of the finished wearing surface, the anchors being bedded diagonally in the concrete.

The work was done during the year 1917, and to date, after nearly two years of service, it is in perfect condition, while the concrete header, tho covered with a surface coating of tar and gravel, gives signs of disintegrating under the traffic. The results of this experiment were so gratifying that at present we are considering plans to make further use of these guards, the scheme being to utilize the old macadam base of a main country road artery by placing concrete headers capped with the steel guard at the edges of the road, with a bituminous concrete wearing surface. By this type of construction it is believed the cost of an entire concrete base can be saved.

The cost of the steel guard construction is slightly in excess of the straight concrete header, but about the same as that of armored concrete.

Steel Guard Adjacent to Car Rail

Another section of about 100 feet was used on Woodland Avenue at 40th Street to take the place of granite block runners. The shoulder was paved with a 6-inch concrete base, 1-inch binder course and 1½-inch asphalt wearing surface. Here the size of the angle was 2 x 2 x ¼-inches with anchors at 18-inch centers, each anchor being tied to the other by a ⅜-inch steel rod. About 30 per cent of this guard was effective, while in 70 per cent the asphalt cracked at the edge. The failure of this test was due to the high carbon steel and the spacing of the anchors.

The anchors in the present design are 10-inch centers, while the steel where used against car rails is made of a lower carbon content. We are about to place 150 feet of the new design at Broad Street, Ridge Avenue. Here it will receive a diagonal crossing which is a severe test.

Summary

Summarizing our experience, it will be seen that the guard used as an edge protection is a direct success, while when used adjacent to rails the results are yet to be proved. There is no doubt that the guard will find an extended use as soon as highway engineers become acquainted with its merits.

In St. Paul, Minn., 91.8 Per Cent of the Water Services Are Metered.
How Does Your City Compare with This?

Chlorine Absorption and the Chlorination of Water

A Study of the Rate of Disinfection of Varying Waters

THE disinfection of waters by means of various forms of chlorine has been practiced in this country and abroad for many years. During this period a general theory of chlorination has grown up, particularly on this side of the water, which has had very little scientific basis. The general hypothesis concerning the effects of chlorination, the proper dosage, and the nature of the chemical and biological reactions have been deduced from a few well-controlled experiments on waters of certain characteristics.

The results of these experiments, however, have led to the universal adoption of chlorination for waters differing materially from those upon which earlier experimental data were made available. When, therefore, a number of water supplies were treated with standardized doses of chlorine, or its compounds, failures in performance were many times recorded. Abel Wolman and Linn H. Enslow were detailed by R. B. Morse, Chief Engineer, Maryland State Department of Health, to make a thoro study of this problem, and the results of their investigation were reported somewhat at length in the *Journal of Industrial and Engineering Chemistry*, from which the following abstract is prepared.

In the supervision and control of a single water supply, the problem of chlorination offers far less difficulty than in the case of a group of water supplies all of which have distinctive and disconcertingly variable qualities. The control of disinfection of a city water supply, supported by daily chemical and bacteriological examinations, may at least approach a scientific procedure, altho surprisingly few cities, even now, actually do more than give a superficial dosing at a more or less constant rate. The supervision of chlorination becomes, however, a problem of major importance when a large series of supplies is to be treated under the direction of some central authority, like a state department of health, or when a municipal supply is taken from a number of sources. With a large number of water supplies, inadequately sampled, some in the raw state, some just after coagulation, some filtered, ranging thru every degree of color and turbidity, now free from organic material and an hour later loaded with surface wash, what form of control should be adopted? Here a speedy, safe, easy method of antecedent control, rather than of subsequent failure, is essential. On this phase of chlorination—the preliminary routine control of widely different types of waters—scientific literature, with very few exceptions, is silent.

When we bear in mind that a number of supplies are under the supervision of laymen, it becomes clear that consistently good results in disinfection are hardly attainable without the use of some presumptive indicator of an efficient chlorine dose. Presumptive tests of chlorine efficiency have been discussed by various students of the problem, but their results can hardly be considered definite.

The present brief discussion is the result of a study, carried on for eighteen months, of the application of chlorination under variable conditions.

Absorption of Available Chlorine

The importance of the absorption of so-called "active chlorine" by different waters is somewhat ill-defined in its relation to disinfection or the elimination of objectionable bacterial life. Some experimenters assert that the amount of absorption discloses little concerning the destruction of bacteria, while others assume that the chlorine consumed in "oxidizing organic matter and various salts will not effect sterilization." Since the latter assumption necessarily permits an increased factor of safety in the control of chlorination, it is probably advantageous to use the hypothesis as a base until the collection of adequate data indicates what quantitative variations therefrom may be necessary.

The investigators carried on considerable experimental work to obtain data on the rate of absorption of chlorine by different waters. Their results indicate that the rate of chlorine absorption deviates from the

recognized law of chemical reaction in an increasing degree with waters of increasing organic contents.

The use of color readings as a presumptive indicator of the amount of chlorine which would be absorbed by a water in a given period has been suggested as a convenient procedure for routine operation of disinfectant plants. To be of any value, such readings should be the result of a long series of correlated experimental observations. Such continuous series have not been developed, it is believed, for many individual water supplies, while still less has been done in the way of comparative readings on different water supplies. While the reported data on this question are not sufficient to warrant any very definite statement, it is believed that the evidence shows that, for the same water supply, changes in color are not necessarily adapted to the prediction of chlorine absorption readings because of the absence of any adequate conversion factor.

Turbidity and the Rate of Chlorine Absorption

An extended study of 350 samples from the Potomac River at Luke, Md., indicates there is practically no correlation between these two phenomena, altho the turbidities ranged from 0 to 90 parts per million. The particular case of the Potomac River is interesting as showing the need for guarding against unwarranted correlations between the physical property of a water and its biochemical action. Sudden rainfalls create dilutions of mine wastes, but at the same time raise the turbidity readings in the water; therefore with the increased muddiness of the water comes a reduction in the strength of the mine wastes which is not very easily predicted.

Oxygen Consumed and the Rate of Chlorine Absorption

An extensive study of this factor has shown a very close variation of chlorine absorption with oxygen-consumed values of different water supplies. This correlation, it should be emphasized, is independent of the source or nature of the water, since the forty-five waters which were tabulated in this study included those from raw surface streams, deep wells, and filtered supplies.

An empirical curve, based on the data secured, indicates at once that the amount of chlorine absorbed in a definite time interval does not increase in direct proportion with the increase in pollution of the water as measured by the oxygen-consumed test, but that the 5-minute rate of chlorine absorption shows a decreasing acceleration with increases in pollution. In other words, increases in oxygen-consumed values appear to result in relative decreases in the intervals between successive chlorine absorption values.

The apparent correlation discussed above has considerable practical importance aside from its use in the chlorination of water supplies. Its probable existence may result in the development of an extremely rapid presumptive indicator of the quality of a water, namely, its chlorine absorption in a definite time interval. It has been found comparatively simple to differentiate between an underground supply of good quality and a comparatively poor surface supply by means of a chlorine absorption test made in five minutes. The information gained would seem to be capable of wider application to the entire field of water treatment.

Chlorine Absorption and Effective Disinfection Dosage

The practical effectiveness of any chlorine treatment is necessarily measured and conditioned by its ability to eliminate the significant bacterial life in the water. The ready preliminary determination of the amount of chlorine necessary for subsequent use to be effective in removal of bacteria has been the chief object of investigations in this field. In practically all of these methods of presumptive testing for effective dosage, chlorine absorption tests have played an important role.

American practice in the chlorination of water supplies has always been sharply differentiated from the foreign. In general, foreign sanitarians have employed chlorine doses appreciably higher than those in use in America. This policy has been the result of a conservative conception of the whole question of chlorination, and has therefore left its impress upon the modern systems of chlorination control.

The principle underlying practically all of the chlorination control procedures is that of measuring the amount of available

chlorine absorbed by the water to be disinfected in a given period of time. To this amount a factor of safety is usually added, giving a resultant so-called effective chlorine index. It is apparent that the important element in the above procedure is the time element. The time interval taken for the measurement of the chlorine absorption is dependent upon the consideration of the death-rate of the bacteria under the existing conditions. A dose measured on the above principle is a safe dose only if the time interval used is amply sufficient to provide for adequate bacteria destruction. The question naturally arises, "What is a safe time interval for the chlorine absorption test?"

The literature on chlorination suggests various answers to this question. Adams, in his discussion of the chlorination of the water of Toronto, Canada, assumes that three minutes (plus a factor of safety) is a sufficient time interval for such a test, but such a time interval as this is not universally applicable, as evidenced by a survey of the data reported by Race. It would appear from the number of his experiments that effective sterilization, or even approximately fair destruction, is frequently not obtained even after a 60-minute interval. The application of a 3-minute absorption test to such a condition would demand, of course, an auxiliary factor of safety of high proportions in order to eliminate the danger of ineffective dosage.

Professor Santoliquido, of Italy, adds to the general theory by stating that "the bactericidal action of chlorine is not instantaneous for any particular bacterium; in order that action should result, there is always necessary a contact period, which, at a minimum, must be from 10 to 20 minutes."

Costa and Pecker modify the system of presumptive test by eliminating the factor of safety and using their so-called "chlorine index." The index appears to differ but slightly, in its evaluation, from the usual chlorine absorption tests reported by other authors and in this discussion.

The foregoing discussion seems to indicate the absence of any general agreement either as to the necessary time interval for the chlorine absorption test or the relative scale of factor of safety. The evidence as to the velocity of bacterial destruction under widely varying conditions is far from complete. If the rates of disinfection shown by the experiments of the author are even approximately correct, it would seem that a 30-minute absorption plus a high factor of safety is hardly necessary. It is doubtful, too, whether such factors of safety as ½ to 1 could be universally employed under such conditions as exist in Maryland, where frequently the period of contact before consumption is so brief as to preclude a dose which would result in such excessive amounts of free chlorine at the tap.

Five- or Thirty-Minute Absorption Test?

For practical purposes, any rapid method of presumptive indication of efficient dosage is particularly valuable. It remains to be determined, however, whether the substitution of a rapid 5- for a safer 30-minute test will result in any practical diminution of a necessary safety factor. The demonstration of such an effect either in the positive or the negative direction would demand manifestly far more experimental proof than is at hand at present.

A series of experiments were run to determine the effect of increased time intervals upon the total amounts of available chlorine absorbed by different waters. In other words, what additional information is gained by extending the absorption test from 5 to 30 or 60 minutes? The answer seems to be that the importance of increasing the period of tests decreases materially with the increased values of the initial 5-minute absorption. Increased safety in dosage is occasioned by the 30-minute test, in those waters where the factor of safety is the least essential. Little additional safety is gained in waters of higher initial absorption.

If the 5-minute chlorine absorption is at all indicative of the pollution content of a water, then the evaluation of a 30-minute test seems to add but little necessary information as to effective dosage. It would hardly be advantageous to use a 30-minute test in preference to a 5-, when the former increases greatly the dosages for good waters and affects but little those of poorer waters. The addition of a constant factor of safety, as for instance 0.2 to the 5-minute absorption value, would apparently accomplish the same result in the routine control of chlorination as the use of a longer absorption time interval.

Why American Cities Must Fight Insects

By Dwight Pierce, Ph. D.
U. S. Bureau of Entomology

IN olden days, when each man thought his life and safety depended upon himself alone, there were no great social efforts, and when plague or black death visited a community, people died like rats, for there was no organized effort to fight the devastating disease.

Little by little it has sunk into the human consciousness that your health and my health depend upon the health of every other living creature in our community. Self-interest lies back of all our great social uplift, for unless we make the lives of those about us safer and happier and healthier we ourselves shall likewise suffer.

We have now come to the days when the world fights plague and yellow fever and many other scourges; when if one nation is stricken, another hastens to its rescue. Why? Because if we allow a disease to fester in part of the social body it will send its poison thru the whole system.

It must, then, be evident to all that if we actually know a focus of a dangerous disease, or the way such a disease is spread, or the means of preventing the spread of such diseases, it is incumbent upon organized society—whether it be nation, state, city or community—to act on this information and prevent the spread of these diseases.

We do know many of these things, but for some reason we do not act in unison. Why? Can it be that the facts are known or grasped by only a few, and that these few have not "put across" the information so that the general public can understand? Perhaps. Is it on account of indifference on the part of the public because the things complained of are so commonplace? Perhaps both reasons hold equally good.

Let me set down in black and white some of the facts over which we must get stirred up until we have united effort.

I am the Baby-Killer!
I come from garbage cans uncovered,
From gutter pools and filth of streets,
From stables and backyards neglected,
Slovenly homes—all manner of unclean places.
I love to crawl on babies' bottles and baby lips;
I love to wipe my poison feet on open food
In stores and markets patronized by fools.

NO FAIRY-TALE HOBGOBLIN
As pictured by the "Newark News," N. J.

How the Fly Menaces Health

The common house-flies of several species which we so commonly see in our homes, on our dining-tables and food, and in the stores where we buy our foods, are probably the filthiest creatures about us and cause more disease than any other one thing.

Do you know that these flies breed in filth, and that they may have come direct from the stools of a typhoid patient, the sputum of a tuberculous person, the open infected sores of some animal, a dead carcass, or other loathsome, disease-contaminated substance? Do you realize that

scarcely a fly that hovers about the milk in the dairy whence your supply comes but has been raised in filth and has come straight from such filth to the milk? And milk is a fine culture medium for disease germs.

When typhoid fever is traced to milk, it is usually found that in the vicinity of the dairy there is a sick person and that the stools of that sick person go into an open privy where the flies are bred that visit your milk.

When infantile diarrhea or dysentery or typhoid breaks out in a small town or in the country where there is no sanitary sewerage, flies spread these diseases to every household that is not protected against them, and often reach such homes by polluting their food at the markets.

Let us not mince words. Flies can successfully transmit any disease germs which they may pick up from sores, pus, sputum, excreta, manure, or carcasses, and they can deposit those germs on your eye, in your ears, in your nose, in sores on your body, and in your food.

(Photo by Dovener)

THE COMMON HOUSE OR TYPHOID FLY, THE MOST UNWELCOME VISITOR TO OUR HOMES

Step by step scientists have now proved how they do it. The larvæ or maggots breeding in a privy, for instance, pass multitudes of germs thru their bodies. Many of these germs do not pass right thru, but lurk in the body of the maggot until it has developed into a fly and flown away from the privy. The fly may wander day by day for miles from its birthplace feeding on other filthy substances, and everywhere it alights it leaves a little drop of excrement and in that excrement for days can be found the germs it took up when a maggot. Finally it lights on some soft, moist food in which the germs can live, and some one eats the polluted food, ignoring or not seeing the tiny speck, and soon physicians are mystified to know how that person took sick of a disease with which there was no apparent contact.

Will You Not Fight With All Your Might?

The entomologists will tell you how to do it effectively and economically.

The Mosquito Carries Disease

Then there is the mosquito. Who has not been bitten by one? In our land the mosquito is principally responsible for two common diseases—malaria and dengue or breakbone fever. You simply cannot take either of these diseases unless you are bitten by a mosquito which has already bitten a person sick from the disease. Then who is to blame if you get sick? Don't put all the blame on the community, for you are a part of it.

Organize your community to down the mosquito.

In southern and tropical climes, other diseases, some very mysterious and some quite hideous, are carried by mosquitoes and midges, so don't let them bite you if you can prevent it.

Cooties Also Carry Disease

Over in Europe our boys suffered from some terrible diseases—trench fever, typhus fever and relapsing fever. Bear this in

mind: Every man who got those diseases was infested with body lice which brought the disease from some sick person. The lice bit him but did not inoculate the germs unless they pushed them into the lesion made by their bite, for the germs normally pass out of the louse's excreta and lie on the man's body. They must be scratched in or in some such way enter the blood. All that is necessary is to bathe frequently and keep the clothes clean. Of course we know the soldiers could not always do this.

Now here is my point: If one single man comes over here with infected lice and they get released in the poorer, more ignorant sections of our cities where lice are more or less common, we may see some of these dreaded diseases common in our own land.

Municipalities can keep down the louse incidence by rigid inspection, baths, and condemnation of infected clothing at jails, poorhouses, hospitals, asylums, lodging-houses and all public institutions. The children in the schools are often infested with head lice. There must be frequent inspections. The municipality must guard its inhabitants.

Look Out for the Flea

The flea alone can carry plague. Rats as well as men can be killed by this dread disease. If the plague exists in some out of the way part of the world and a ship docks there, a rat may come aboard and breed. This rat may have the plague, and its fleas spread the disease to other rats and soon to men. That ship docks at another port and the rats come ashore, and coming in contact with other wharf rats infect them. Soon plague appears among the people.

How clearly now we see that we must be our brother's keeper!

Diseases Are Carried by Bedbugs and Roaches

So, likewise, the bedbug in the hotel bites a transient guest who has some infectious blood disease, and a few days later it bites another guest and transmits that disease. It is most likely to do so if the guest scratches the bite or crushes the bug on his body over a scratched area.

The cockroach glides from privy to pantry, polluting wherever it goes. Beware of it, for it is a nasty creature capable of doing serious damage. Sanitary inspectors should watch the boarding-houses, restaurants and hotels, where cockroaches have their richest opportunity of spreading disease.

Is it not plain that we American people must wake up? Why tolerate so many of these preventable diseases? Let every American municipality take careful measures to hold down loathsome disease-carriers. There is no reason why we should permit hotels to remain bedbug-infested, nor public eating-places and stores to be swarming with roaches. Municipal action can govern such places. For the sake of public welfare, disease-carrying insects must not be tolerated in places which the general public patronize.

Housefly control in a city can be largely governed by adequate municipal inspection. Mosquito control is a question of inspection and drainage. Rat-flea control is difficult, but municipal regulations requiring rat-proofing will go a long way toward protecting cities from rat-flea-borne diseases.

No Health Department, State or Municipal, Can Effectively Prevent or Control Disease Without Knowledge of When, Where and Under What Conditions Cases Are Occurring.

See That the Vital Statistics of Your City Are Properly Maintained!

Refrigeration in Its Relation to the Municipal Power Plant

By J. V. Martenis
Assistant Professor of Mechanical Engineering, University of Minnesota

ONE important "side line" now forming a part of the business in many of our power plants is central station heating. The heating business produces a satisfactory income where it is properly managed, but this income is available only during the heating season. It is therefore quite natural that the management should look around for some means to secure an additional income so that the plant may be operated with greater efficiency and a larger profit on the capital invested. One way in which a municipal plant can serve a public need is in the manufacture of ice.

The idea of incorporating ice manufacture as a part of the business of a power plant is not a new one, for it has been tried out in many places with good results. There are more than 300 power plants now operating ice machines, requiring but little additional help and making a good profit in the business.

The relative merits of manufactured versus natural ice have been fully discussed at various times. In general, the manufactured product is to be preferred because of its clearness, purity and timely production. It is not necessary to produce more ice than can be marketed, and no storage is required unless the smaller consumption during the winter months shows the desirability of storing away a quantity to meet the trade conditions during the summer months. Ice when manufactured in connection with a municipal plant can compete successfully with the natural product, and will tend to curb the tendency of independent companies to unduly raise prices.

It will be evident to those who study the ice-making problem carefully that there are great possibilities in it when operated in connection with a municipal plant. It is also quite evident that all municipal plants could not be equally successful in the venture because of local conditions, but that fact should not deter others from a careful consideration of the problem. There is ample evidence that many plants have found the venture profitable, and in some cases it has been found necessary to put in additional facilities to meet the demand.

Type of Plant Needed

Refrigeration or a cooling effect can be produced in two principal ways: first, by compressing a gas, then cooling it and finally allowing the cooled compressed gas to expand and do work; second, to use a medium which can be liquefied under pressure, then allowing the liquid to vaporize and in so doing absorb heat. The first method is used in the "dense air" ice machines, in which it is impossible to attain temperatures lower than 50 degrees below zero, but it is not an economical form of refrigerating machine. The second method is used in practically all the commercial ice machines.

The liquid used in one type of machine is water, which vaporizes at a temperature corresponding to the pressure, so that when the pressure is reduced below atmospheric the vaporizing temperature is less than 212 degrees Fahrenheit, in proportion to the reduction in pressure. This type of machine is especially well adapted to temperatures of 30 to 40 degrees Fahrenheit and gives good economy at these temperatures.

The other substances principally used in refrigerating machines are ammonia, carbon dioxide and sulphur dioxide. Of these, ammonia is used in by far the largest number of commercial machines.

Without going further into the merits of different refrigerants, present practice shows that ammonia is used in 90 to 95 per cent of the commercial ice-making machines in the United States, and for general refrigerating and ice-making purposes it is the refrigerant that will be used in most commercial plants, altho there might be peculiar conditions that would prohibit its use.

There are two types of ammonia machines in use for ice making and other re-

frigerating purposes—the compression and the absorption machines.

The compression type of refrigerating machine resembles a steam engine and operates by taking in a charge of gas by suction and subjecting it to a pressure which must be sufficient to liquefy it when it is cooled by the circulating water. For instance, if the gas is cooled to 80 degrees Fahrenheit, a pressure of about 154 pounds per square inch will be required to liquefy it. So, if the pressure be reduced, the liquid ammonia will change back to a gas and in so doing will absorb about 503 British thermal units for each pound vaporized.

The absorption machine operates upon quite a different principle. In it the ammonia gas as it leaves the brine cooler is absorbed by a weak ammonia liquor, which is pumped thru the exchanger into the generator, where a steam coil heats it and drives off the ammonia gas, with some water vapor. The water vapor is largely eliminated as it passes thru the analyzer, and in the rectifier the remaining moisture is all taken out, leaving the dry ammonia gas to pass into the condenser, where it liquefies and is ready for expansion into the brine cooling coils. The steam pressure used in the generator coils varies from 3½ to 20 pounds per square inch.

The ammonia compression machine will require from 1 to 2½ horse-power per ton of refrigeration, depending upon the suction pressure. The ammonia machine will require from 26 to 38 pounds of steam per ton of refrigeration when the analyzer is used.

Ice Plant Systems

Two systems of manufacturing ice in common use are the "can" system and the "plate" system. Each system may use either distilled or raw water for making the ice. In the can system the standard cakes of ice weigh about 300 pounds, measuring 11 x 22 x 44 inches, while in the plate system the cakes of ice are 10 x 12 x 30 inches. A plant operating with raw water may be electrically driven to advantage, whereas the distilled water plant can use exhaust steam in the distiller.

The cost of the plate system is approximately one-third more than that of the can system. The can system may be arranged so that ice is being drawn thruout the day, using a hand tackle, while in the plate system the ice is drawn, sawed and stored in a few hours and requires a power hoist.

Owing to the increase in the cost of fuel, labor, etc., the cost of power for making ice can be given only for certain conditions of expense. In a steam-driven plant where coal costs $7.50 per ton, the power cost per ton of ice will be approximately 39 cents. Again, the cost per ton of ice will decrease as the amount of ice made increases. The cost per ton of ice will decrease as the amount of pipe surface installed in the brine tank increases.

If the compression system is used, two forms of power may be used to drive the compressor,—steam or electric,—and the preference for many of the municipal plants would be electric, because it is during the ice-making or summer season that the power load is likely to be the lightest and the addition of the refrigerating load would build up the load factor and enable the plant to operate with a greater efficiency.

To emphasize the financial side of the refrigerating business, let me quote some figures from plants now operating:

A 30-ton steam-driven compression plant made a profit of $4,900 on ice alone. A 20-ton steam-driven compression plant made a satisfactory profit. A 30-ton absorption plant using exhaust steam from pumps and auxiliaries made in one month a profit of $217. In a 7-ton steam-driven plant the profits averaged $500 a month. A 10-ton absorption plant earned a profit of $3,545 for the period of June to September.

The towns in which the above-quoted plants are located vary in population from 15,000 to 2,500.

An operator says:

"My experience in the ice business shows that many poor-paying power plants can be put on a dividend-paying basis thru it, and the increase in operating cost is small. I believe a plant that is trying to put on a day circuit could have a nice business by adding an ice plant. We propose to increase the present 10-ton steam-driven plant to a 25-ton motor-driven plant and shut it off during the peak load. We use the can system and operate twelve months, but during the winter make only enough ice to supply the demand."

Acknowledgment.—From a paper read before the League of Minnesota Municipalities.

The Cleaning of Receiving Basins and Grit Chambers by Hydraulic Methods

By Charles E. Gregory
Former Engineer in Charge of Sewers, Boro of Manhattan, New York

ONE of the most disagreeable and expensive features of the administration of a sewer system in a great city is the removal of grit and detritus from receiving basins and grit chambers. Various devices have been used for this purpose from time to time, but for the most part this work has been done by hand labor.

The ordinary method of cleaning receiving basins in New York City is to send men down into the basin to dig out the material and place it in buckets, which are hauled or hoisted to the surface and dumped into water-tight carts. The material is then transported to the nearest available dump. In the boro of Manhattan these distances are often as great as three or four miles, and much time is consumed by the horse-drawn vehicles. The ordinary cleaning operation is a very unsightly and unsanitary nuisance, as passers-by are liable to be spattered, and sometimes the odors are quite offensive.

In 1916 a better method of cleaning receiving-basins was sought, and various devices were considered and tried out. The first machine which was constructed to do this work consisted of a 5-ton Packard truck with a 5-cubic-yard capacity metal dumping body, equipped with a crane and power hoist arranged to operate a small orange peel grab bucket. This bucket was small enough to pass thru the ordinary circular opening in the top of the basin, which is usually about 20 inches in diameter. The bucket closed by a cylinder and piston acting under oil pressure, the entire device being operated by power from the engine in the truck. This device worked successfully, but was disappointing as far as speed of operation was concerned, the grab bucket being so small that a great many operations of the bucket were necessary to clean a basin. The principal advantage of this machine over the ordinary hand labor and horse-drawn carts was at the transportation end, where considerable time was saved in going to and from the dump.

The advantage of motor equipment over

AUTO EDUCTOR IN USE IN THE BORO OF MANHATTAN

horse-drawn vehicles was so apparent, however, that a better method of removing the detritus from the basins was sought, and an investigation of some hydraulic means of accomplishing this purpose was made, with the result that the so-called Otterson Eductor was found to have been operating successfully in some western cities. One of these machines, mounted on a motor truck, was purchased and placed in operation in the Boro of Manhattan in 1917.

The Machine and Its Operation

This equipment consists of three principal parts, namely, the truck and body, the pump, and the eductor and pipe. The body of the truck is constructed of No. 10 gauge steel plates on a framework of 3 x 3-inch angle iron. The tail gate is hinged at the top and is reinforced with a 3 x 3-inch angle frame. This gate is made watertight by screwing down on five swivel clamp bolts which press a rubber gasket attached to the inner face of the gate against the angle frame running around the rear of the body. A steel plate is bolted over the top of the front of the body to protect the driver from splash. A set of baffle plates are inserted in the body and are hung from an angle framework. The rear baffle is a steel plate screen with ¾-inch holes. Along one side of the body a channel is partitioned off by a steel plate to allow the water which has passed thru the body to return to the front end of the truck. A standard centrifugal pump operated by power from the motor of the truck is mounted on the right-hand side and is securely attached to the truck frame. A pressure gauge is provided on the right-hand side of the seat so that the driver can regulate the motor speed to give the proper pressure to the eductor. For ordinary working purposes the pressure is between 50 and 60 pounds. The eductor with its connecting piping is suspended from a bracket at the front of the body. This bracket is so designed that the arm which carries the eductor may be extended out to a considerable distance from the body of the truck. The discharge pipe from the eductor is 2 inches in diameter and discharges directly into the front end of the body. The eductor itself is at the bottom end of the pipe, which is telescoping, so that the eductor may be operated at various depths within the catch-basin.

The eductor operates on a steam syphoning principle, a jet of water at high velocity thru the throat of the eductor causing a suction at the open inlet to the eductor. The eductor and pipe is raised in and out of each catch-basin by a winch attached to the right-hand side of the truck. The eductor is not a device of high efficiency, but, being entirely free from any moving part, is particularly suitable for the removal of detritus from receiving-basins. It is estimated that the discharge pipe carries from 20 to 30 per cent of solids, which quickly settle down in the body on account of the baffle plates and strainers, the clear water returning to the pump and eductor in a continuous cycle until all of the solids have been removed from the receiving-basin.

Before purchasing the truck, a representative of this department went to Boston to witness a demonstration. A load was obtained from three receiving basins, which were cleaned in from five to seven and one-half minutes each. This demonstration indicated that under Manhattan conditions it would be possible to remove five or six loads per day, or about 22½ cubic yards, at an operating cost of about $12.00 per day, not including depreciation of plant, or $19.50, including depreciation and repairs. The cost of cleaning basins by the old method had been from $1.50 to $1.60 per cubic yard, and this test seemed to indicate that the same work could be done at less than $1.00 a yard with the eductor equipment.

During 1917 the machine was operated by a new gang of men who had to be broken into the methods of handling the apparatus, and quite naturally rather erratic results were obtained at first. It was soon found that the machine worked very much better where the material in the basins consisted of relatively clean sand and gravel. Under such conditions, as much as thirty cubic yards was removed in one day, even tho the distance to the dump was considerable. The average performance, however, was very much less on account of the fact that in a great many localities in the Boro of Manhattan the material in the receiving-basins contains a large quantity of tin cans, bottles, sticks, etc., which when sucked into the throat of

the eductor obstruct the pipe until they can be thrown out by reversing the flow.

The time for cleaning a single basin has varied from five minutes to two hours. The average for the year, including idle time for repairs, etc., was about 11.4 cubic yards per day. The machine was used, however, almost entirely in the upper end of the island, where the haul is very long and where the cost with horse-drawn vehicles is excessive. This, in spite of the disappointing performance, leaves the cost somewhat less than under the older methods. The fact that the performance of the machine is so unusual under certain conditions encourages me to hope that under more experienced operation and management very much better results may be obtained.

Since the purchase of the above-mentioned machine a number of material improvements in detail have been made by the manufacturer, and I believe it is reasonable to expect that a much better result can be obtained from the improved machine. Various methods were tried for excluding sticks and cans from the inlet of the eductor, with varying success. Where the obstructing materials were not too numerous, it was possible to operate with satisfactory speed. The performance of this machine for 1918 was not as good as that for 1917, partly because some of the parts of the machine had become worn, and partly because of very unsatisfactory labor conditions due to the war.

A sewage screening plant has recently been erected at Dyckman Street and the Hudson River in the boro of Manhattan. This plant includes a grit chamber for intercepting sand and gravel and keeping it from the screens and the submerged pipe. Stationary eductors were installed in these chambers at the apex of hopper-shaped bottoms. The eductors are to be operated by water pressure from the city water mains, thus entirely eliminating all moving parts from the device for emptying the grit chambers. The ground adjacent to the plant is within the bulkhead line and is to be filled up in the near future, and the grit from the grit chamber is at the present time discharged into an open space which is below grade and is adjacent to the plant.

There has been a little trouble with these eductors on account of a considerable quantity of large rags, such as sheets or skirts. It has always been possible, however to locate and remove these rags with a hook on the end of a pole. Each grit chamber is provided with an agitator, which consists of a water pipe and nozzle for stirring up the sediment with the water so that it will flow easily into the inlet of the eductor. The lift at this place is not very great, and the operation as a whole has been very successful.

The following table gives the estimated heights to which material may be elevated for various water pressures with the Otterson Eductor:

PRESSURE REQUIRED TO OPERATE EDUCTORS

Height Elevated, Feet	Required Pressure, Pounds
15	55
20	70
25	82
30	95
35	104
40	112
45	122
50	130

The above table is figured on 30 per cent solids.

An Appreciation

TO THE EDITOR OF THE AMERICAN CITY:

Will you allow me to express thru the columns of your valuable paper my appreciation of the courtesy, kindness and valuable assistance that I have received at the hands of the mayors, aldermen, councilmen and civic administrators and officials that it has been my privilege to meet during my stay in the United States and Canada while investigating on behalf of the City Council of Auckland, New Zealand, the municipal administration and works of American and Canadian cities. Wherever I have gone a warm welcome has been accorded me and facilities placed at my disposal to enable me to achieve my object, so that in the future America and Canada will be interesting not only for the notable works I have seen here, but also for the comradeship of those whom I have been brought in contact with.

Thanking you in anticipation, I am, dear sir, Yours faithfully,

W. E. BUSH, M. I. C. E.,
City Engineer, Auckland, New Zealand.

Chester's New Civic Center

By Louis J. F. Moore

WITH the beginning of the Great War, Chester, Pa., became an industrial center devoted to the manufacture of munitions.

A conflict arose between the new growth and the necessity of preserving the traditions of a Pennsylvania town. The waste lands along the Delaware were converted by pile-drivers and concrete mixers into great shops and shipyards. All the evils of a boom town appeared and Chester might have been forgiven if, grasping only at the immediate gain of this sudden growth, it had forgotten its plans and its love of tradition. It might have torn down old landmarks, old walls and buildings rich with color, and replaced the meticulous work of dead artisans with unashamed—and unornamental—plate glass and galvanized iron fronts.

But it did none of these. It provided the space for the new shipyards and munition plants and gave them every facility of commerce, but still went quietly about its city planning on the lines laid down, in part, some years before.

The Town Plan

To appreciate Chester's problem, one must have a rough idea of the city's layout. Along the Delaware the shipping takes up nearly the entire water-front. Railroad spurs, power plants and slums lie along the shore ends of wharves. Three blocks uptown, at Third Street, a cross-town street carries lines of shops to southern Chester, and trolleys running north to the munition works and Philadelphia. On Market Street, the principal business street between 5th and 6th, stands the old City Hall, and from it, as a center, the new development of Chester may be said to be laid.

Several years ago, the city decided to do what pitifully few of our American cities have done: it decided that its future growth should be along predetermined lines, intelligently planned, honestly carried out. It planned to link Crozier Park and Deshong Park with the old City Hall and Chester Park by a system of boulevards. Then after Deshong Park was completed, with its drives along Chester Creek, its public tennis courts, ball grounds, proposed swimming-pools, outdoor playgrounds and other features, the plans for the restoration of the City Hall and the development of a civic center were taken up and carried out. The original idea of this restoration had been decided on some years before, but in a tentative form. Gradually the plans took shape and, along with funds for the restoration of the old hall, it was planned to provide funds for a modern building for the executive offices of the city officials.

As the plans were made, the town planning movement that has been felt thruout the country gave a new impetus to the project and opened up a new phase of the problem. Why not a civic center, keeping the old hall in its ancient form?

The Development of the Civic Center

Public-minded citizens purchased the old Farmers' Market by subscription, and agreed to turn it over to the city in the event of its being needed for public purposes. Thus, before the land value had felt the surge of war's industrial expansion, it was possible to save the city at least one-half the present valuation of the property.

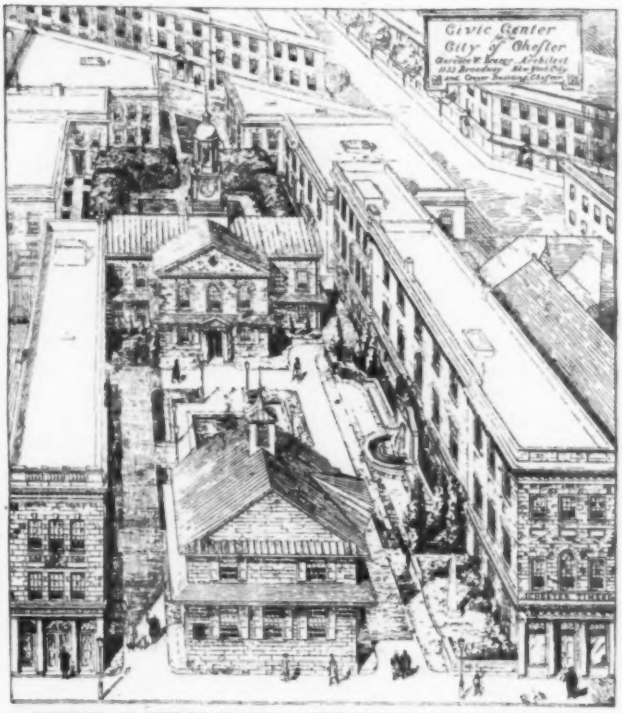
Following this, the Pennsylvania Historical Commission voted to act with the city of Chester in the restoration of the priceless old City Hall, and appropriated $5,000 toward the work. State Senator Sproul, however, in addition to scrapping the granite front of the neighboring *Chester Times* Building and erecting a new front and side to conform with the old architecture, has since generously offered to finance the restoration of the City Hall, costing over $12,000, entirely from his own resources.

The plan was given impetus by the project as mapped out by Brazer and Robb, of New York, and shown when their first plans for Deshong Park were submitted in the competition for that private enterprise.

Further development will be made nearer the railroad station where Market Street and Edgmont Avenue join, and back of this new center a slum district will give way

to widened streets and to buildings of a new character. It is planned to extend the parking section along Chester River and to connect it with a recreation center or park where the river runs into the Delaware. But these latter schemes are in the future.

The general architectural and landscape plans finally selected were by Clarence Wilson Brazer, whose family has long been identified with Delaware County. The plans called for the erection of the new office building for the city in the rear of the property, and the restoration, line for line, of the old City Hall on its site in Market Street.



SKETCH OF THE PROPOSED CIVIC CENTER FOR THE CITY OF CHESTER, PA.

The general scheme is shown in the accompanying reproduction of the architect's drawing. In the space between the two side buildings and the front and rear lines of the property, gardens will be formed as shown, altho at present there is some question as to the location of the memorial fountain. The new executive building will be in pure Colonial, and the stone work will match the old sawed ashlar of the ancient City Hall; in fact, the same ledge rock will be quarried. Few have had a chance to see the fine texture of the old masonry work because some time in the dark ages of the '70's a rustic-minded city official covered the beautiful ashlar with green paint, under a misconception of what was really fine.

In 1724, when Chester's City Hall was built, it was the most imposing public structure in the province. This fact may have had some influence in leading the old Pennsylvania Assembly—but five years later—to take preliminary steps for the construction of a State House in Philadelphia, which was finished in 1738 and later became Independence Hall.

The Chester City Hall was eighteen years older than the original Faneuil Hall in Boston, which was destroyed by fire. It was almost forty years older than the present "Cradle of Liberty," which was built in 1763.

The City Hall

As to the new City Hall itself, the first floor of the main building, on the north side, will be occupied by the City Treasurer, the City Clerk, the Commissioner of Finance, with a private office for that official, the Assessors and Controllers and the Commissioners of Parks and Improvements. The Park Department will also be provided with a private office for the Commissioner. Directly opposite these offices, across the corridors on the south side of the building, will be a suite of offices for the Commissioner of Highways. Vaults for the new building will be on the north side. Modern lavatories will be in the rear.

On the second floor, facing Market

Street, will be the Council Chamber. The north wing offices will be occupied by the Mayor. The two offices in the northwest corner of the building have been assigned to the City Solicitor. The south wing will be occupied by the Department of Health, the Commissioner of Public Safety, the Building Inspector and the Plumbing Inspector. Each official will have a separate office. Lavatories will be on the south side.

The present plans of the Superintendent of Improvements call for the restoration of the historical City Hall, leaving an entrance to the new Municipal Building from Market Street on each side of the present City Hall.

The work is progressing slowly because of the present conditions of labor and material, but, despite this, the plans for the final linking up of the central part of the city with Crozier, Chester and Deshong Parks have been prepared in detail. When finally developed, the three parks will be connected with boulevards, and the meandering Chester River will be spanned by bridges. Along the drives a very fine residential section has already begun to spring up. A small community of several hundred model dwellings has been started by local capital across the bend in the Chester River south of Deshong Park. Its site was formerly an ice pond, in summer a bad breeding-place for mosquitoes.

Improving the Safety and Attractiveness of Electric Street Signs

Portland, Ore., Prohibits Unsightly Electric Signs and Prevents Blanketing

By H. E. Plummer
Inspector of Buildings, Portland, Ore.

AFTER spending nearly three years studying the electric sign problem in Portland, the Department of Public Works assisted a special committee, appointed to consider electric street signs, in framing and securing the passage of an ordinance to protect the artistic features of electric signs, as well as the pedestrian and the man displaying the sign, and to require ample illumination of the sign. The ordinance, which was passed only a few months ago, has some particularly strong features. One authorizes the Inspector of Buildings to use his judgment in approving signs as regards their attractiveness in appearance; another regulates the location and size of signs, to prevent the blanketing of one electric sign by another. In the August, 1917, issue of THE AMERICAN CITY, an article, on page 143, entitled "Survey of Illuminated Signs in Portland, Ore.," dealt with the first-named feature, namely, the result of the investigation of electric signs from the artistic standpoint. Much progress was made thru this investigation, and the following section of the ordinance was based on the results of the study:

"DESIGN OF SIGNS: No permit shall be issued for any sign which represents any article or thing which is of non-artistic nature, or which in itself is unsightly, grotesque, of offensive character or a monstrosity, it being the intent and purpose of this ordinance that all signs constructed over sidewalks shall be attractive in appearance. Any person who feels aggrieved by the refusal of the Inspector of Buildings to issue a permit as herein provided may appeal to the Council for relief from the action of said inspector."*

Under the head "Definitions," the new ordinance defines "blanketing" as meaning the partial or complete shutting off from view of any portion of the face of a sign when viewed by an observer from a point 60 feet away, with the eye of the observer 5 feet above the sidewalk. The portion of the ordinance dealing with this section bears the title "Location of Signs." It reads as follows:

* If no right of appeal to the Council were introduced into the ordinance, it is probable that the right of the Inspector of Buildings to approve signs for appearance would be ruled illegal by the courts.

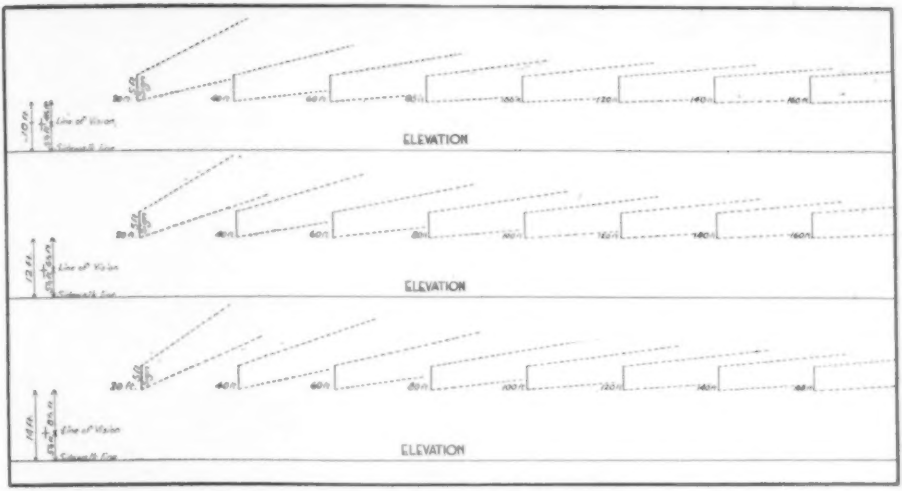


DIAGRAM SHOWING THE LINES OF VISION AND THE BLANKETING EFFECT OF SIGNS AT VARIOUS DISTANCES FROM THE OBSERVER

"No horizontal sign shall be erected in such location that the same will, when viewed 60 feet away, with the eye of the observer 5 feet above the sidewalk, blanket another sign 80 feet away, of the same distance above the sidewalk. A border not exceeding 3 inches in width may be blanketed without coming within the scope of this ordinance."

In order to further protect the city, a section was inserted in the ordinance stating that all signs erected within the fire limits must be constructed of metal not lighter than No. 28 U. S. steel gauge, or other non-combustible material. In order to protect the pedestrian, the ordinance provides that glass in which wire mesh is embedded shall not exceed 720 square inches in area, or 48 inches in any dimension for one piece. Glass in which wire mesh is not imbedded must not be less than ¼-inch in thickness and must not exceed more than 50 square inches in area for any one piece, except where letters or numerals made of glass have a surface covered by metal. Further protection of pedestrians is provided by the requirement that all signs be supported from the building with proper metal supports, which, when attached to a masonry wall, must be secured by expansion bolts or anchor bolts and laterally fastened with guy wires by adjustable turn buckles.

The following table covers the allowable height of horizontal signs and makes it unnecessary for a sign builder to perform any calculation covering blanketing.

Distance of Lower Line of Horizontal Signs Above the Sidewalk, Feet	Maximum Height of Horizontal Signs, Inches
10	24
11	27
12	30
13	33
14	36
15	40
16	44
17	48
18	52
19	54
20	54

It is provided that no vertical signs shall project more than six feet beyond the property line, and that the lowest part of any vertical sign shall not be less than 15 feet above the sidewalk. No horizontal sign can be erected within 20 feet of another similar sign, measuring from center to center of the signs, when any portion of the second horizontal sign is in the same horizontal plane as the adjacent sign.

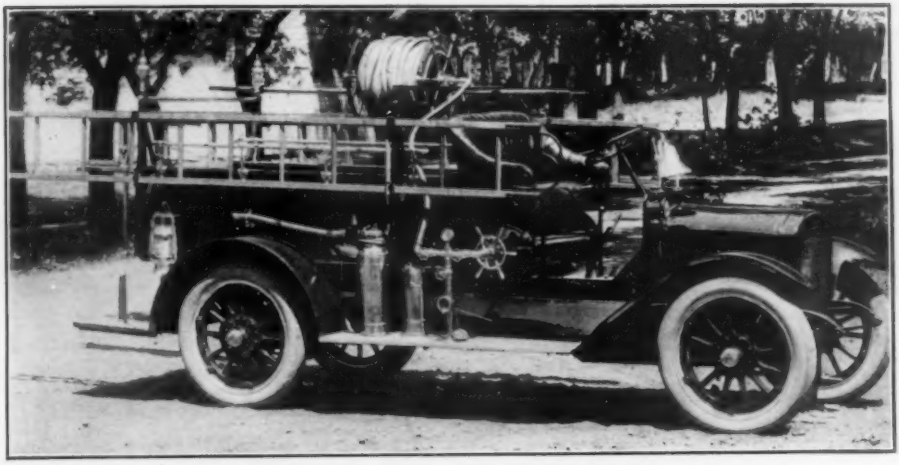
The ordinance is replete with specific data providing for the proper illumination of signs so that they are attractive, and for their proper fastening so that they will not swing with the wind. There is also a provision that they be properly maintained, and cleaned or painted once a year.

The author will be glad to furnish copies of the ordinance to any readers of THE AMERICAN CITY who are interested in this matter of improving electric signs.

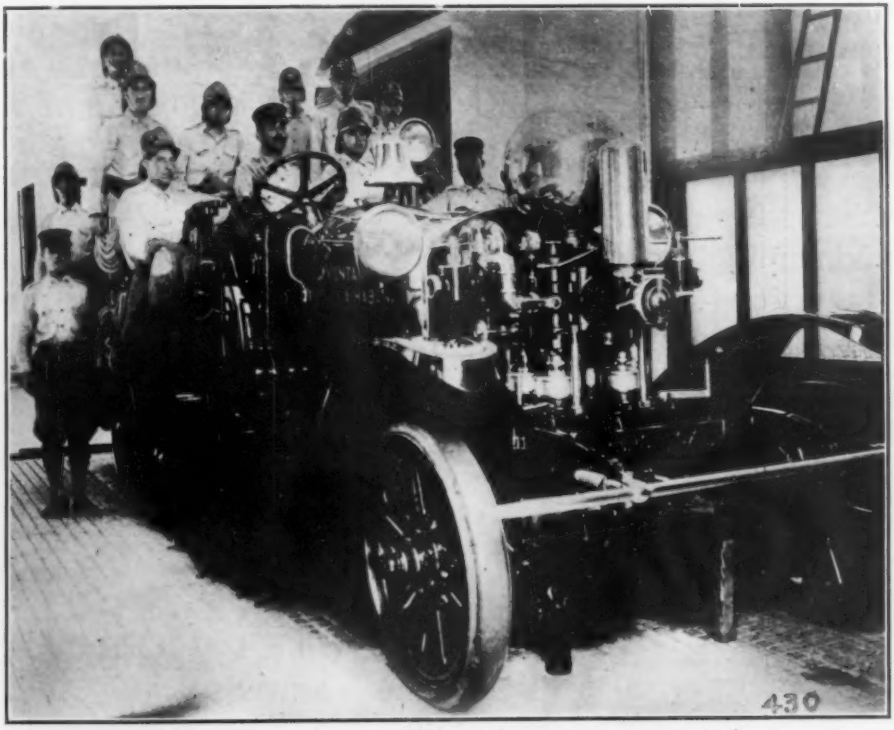
The Motor Truck in Paving, Sanitary, and Fire Department Service

AN INDIANA TRUCK ON A PAVING JOB IN PITTSBURG, KANS.

AUTOCAR USED BY THE CITY SANITARY DEPARTMENT, TAMPA, FLA.



A ¾-TON GMC FIRE TRUCK IN SERVICE IN MITCHELL, NEBR.

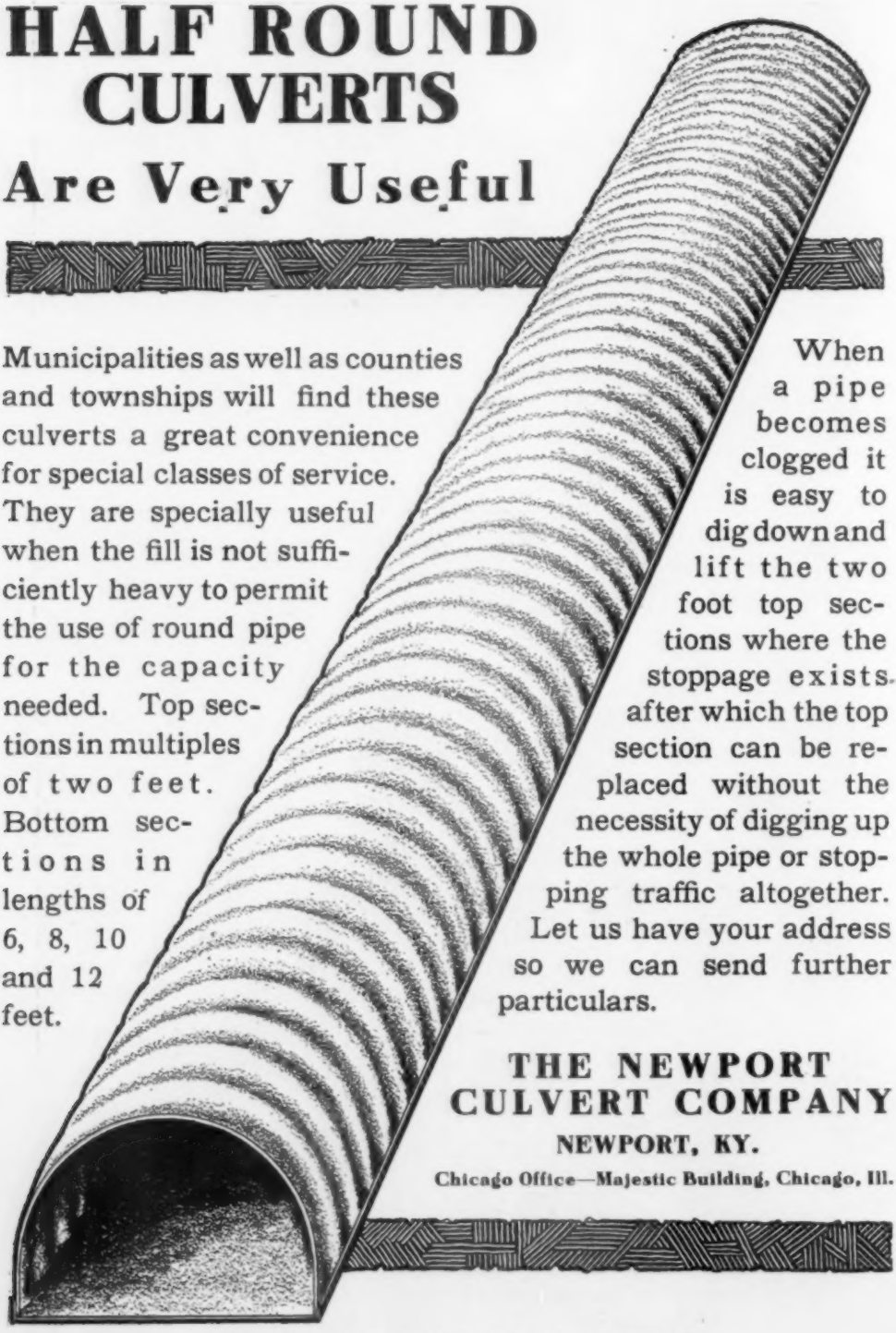


THIS AHRENS-FOX PUMPER TRAVELED 111 MILES FROM HAVANA, CUBA, TO FIGHT A SUGAR FIRE

With a fire raging at Cardenas, Matanzas, nearly 111 miles from Havana, this machine left Havana under its own power, and made the trip over all kinds of roads in 5 hours and 10 minutes. Then it threw two streams of water on the fire continuously until it was extinguished, 24 hours and 10 minutes later

HALF ROUND CULVERTS

Are Very Useful



Municipalities as well as counties and townships will find these culverts a great convenience for special classes of service. They are specially useful when the fill is not sufficiently heavy to permit the use of round pipe for the capacity needed. Top sections in multiples of two feet. Bottom sections in lengths of 6, 8, 10 and 12 feet.

When a pipe becomes clogged it is easy to dig down and lift the two foot top sections where the stoppage exists, after which the top section can be replaced without the necessity of digging up the whole pipe or stopping traffic altogether. Let us have your address so we can send further particulars.

THE NEWPORT CULVERT COMPANY

NEWPORT, KY.

Chicago Office—Majestic Building, Chicago, Ill.

A Community Market That Operates a Motor Truck Delivery System Direct to Neighboring Cities

By W. A. Carpenter

IN April, 1918, the community market of Adrian, Mich., was organized, with a very modest capitalization, the stock being apportioned in small blocks among Adrian business men and near-by farmers. The market was not designed as a money-maker so much as to provide a clearing-house for produce—to link up the grower and the dealer, and, eventually, the ultimate consumer. W. G. Braden, an experienced produce buyer, who has made a success of a similar undertaking in Minnesota, was appointed manager. A vacant mill property, centrally located, was secured, and the market was ready for business.

From the outset, anything in the line of farm products having a merchantable value was purchased, in any quantity, from a dozen eggs or a chicken to a thousand bushels of potatoes or a whole beef. It took a little time to get the project established, but the farmers were quick to realize the advantage of having a central receiving station to which they could drive direct and get cash for whatever they had to sell, for the average market price, without having to peddle their wares from store to store and often take the proceeds out in trade. In a short time the supplies began to pour in at such a rate that the local market was outgrown, and it was necessary to seek an outlet for the surplus elsewhere. Thirty-five miles to the east lay Toledo; twice that distance to the northeast was Detroit.

At first, shipments were made by rail, but the disadvantages of this method speedily manifested themselves, particularly with the class of products handled, and a different method of transportation became a necessity. Eggs and live chickens were shipped in great quantities. The methods of handling by the express companies were none too gentle, and a considerable discount for breakage always featured shipments of eggs. Likewise, if an incautious chicken chose to poke its head thru the crate at the moment when another crate was being deposited atop, there was a dead bird for which no payment was made. Various other drawbacks, not the least of which were the heavy express charges and slowness of delivery at destination, led Manager Braden to install a 2-ton Acme truck, doing away entirely with railroad service. This truck has now been in service about 8½ months, making four and five trips per week to Detroit, a round-trip distance of 140 miles, and one to Toledo, the latter a 70-mile round-trip distance. During these 8½ months this truck has hauled more than $80,000 worth of products, the greater part of it foodstuffs from the farm.

Manager Braden deals direct with produce men in Detroit, the stuff being laid down at their warehouses ready to resell while it is absolutely fresh. No attempt is made to pick produce up along the line, because it is essentially thru-service for the benefit of the Adrian community market. The average time for a one-way trip to Detroit is around six hours, altho upon occasion this has been cut down close to four.

Detailed accounts of cost of operation have been kept from the beginning. Based on these, here is a statement of a round-trip run to Detroit compiled by Manager Braden:

LIABILITY	
Driver, round-trip	$6.00
Gasoline	4.74
Oil	.75
Manager	5.00
Insurance	2.00
Repairs	4.00
Interest on investment, about	1.00
Depreciation	3.00
Meals for driver	1.50
	$27.99
Surplus on average trip	16.26
	$44.25

ASSETS	
Express on load equal to	$29.25
Saving on shrinkage, about	10.00
Saving on coops	2.00
Return hauling	3.00
	$44.25

Remember this—

The Otterson Auto Eductor

quickly and economically cleans catch basins, and privy vaults and unwaters trenches, also used for

Sinking Bridge Caissons

The Otterson Eductor may include this type of work in its rapidly extending field with its typical economy and speed.

Cleaning Grit Chambers

One of the mean jobs at a sewage treatment plant is cleaning the grit chamber. The Otterson Eductor can handle this quickly in addition to its other daily work.

Removing Septic Tank Sludge

This is usually a long tedious process but becomes speedy and minus its usual discomforts when done with the Otterson Auto-Eductor.

EQUIPMENT MOUNTED ON ANY 5-TON CHASSIS OF SUITABLE STANDARD MAKE

THE OTTERSON AUTO-EDUCTOR COMPANY

817 Fairbanks Building **Springfield, Ohio**

MORE THAN $80,000 WORTH OF PRODUCTS HAVE BEEN HAULED BY THIS TRUCK WITHIN 8½ MONTHS

Saving on shrinkage is due to several causes, not the least serious of which was the killing of chickens in transit. On a single express shipment, allowance had to be made for as many as thirteen that arrived at their destination dead, and rarely was only one registered. There was a considerable breakage on eggs, and deductions were made by commission men for vegetables and fruit that had deteriorated.

Return hauling represents the earnings on shipments from Detroit or intermediate points to Adrian. This item is small, but it has been due to inability to interest local merchants in having their foods sent in this manner, altho with the establishment in Detroit of a return loads bureau, and missionary work at the other end of the line, it is expected to materially increase this showing.

"There are certain important features of a trucking proposition such as ours that cannot be tabulated in cold figures," says the manager, in discussing the project and its development. "First of all, there is a great deal more satisfaction, because you are enabled to treat directly with the commission man, and there is no chance for argument on either side. Under the old system there was constant haggling with some of our customers, altho with others our relations were the best. There would be demands for allowances because of breakage or deterioration, and we had no way of checking up on these demands, with the result that there was a very material shrinkage, as the table shows.

"There was the matter of hides, for example. It is an unwritten rule among commission men that the very first thing to do is to deduct two pounds on every hide offered for sale. After that, they settle on the market basis. Now, with hides at, say, 15 cents a pound, that is a pretty fair profit to the buyer right at the outset. Then there was always a chance for argument on the quality of the hide. Naturally, we were never overpaid. With our driver on the job there is no two-pound deduction. We are paid for full weight.

"There is another important consideration, and that is the ability to take advantage of current market prices. If a dealer orders twenty-five cases of eggs from you, say, on Friday, to be shipped by express, if the price is higher Saturday than Monday he will settle on Monday's basis.

"Often, too, there is a material advantage because of ability to supply a want in a hurry. Recently a Detroit commission firm called us by telephone and wanted a shipment of chickens, offering us 1¼ cents a pound above the current quotation if they were laid down to them the next morning.

Rideout Road, Toledo, Ohio. All during 1918 this road was traversed by Army trucks being driven to the Atlantic seaboard. Macadam road resurfaced with "Tarvia-X" in 1913 and treated with "Tarvia-B" in 1916 and 1918.

Total amount invested in this road for 18 years now saved every 10 months!

THIS is Wood County's heaviest traveled road. All automobiles and motor trucks in transit overland around the western end of Lake Erie from Detroit and Toledo to the East must drive over this highway. In fact, most of the overland motor traffic to the South also takes this route.

Mr. John F. Gallier, County Surveyor of Wood County, recently figured that this highway carries 2,000 tons per day for its entire length of 7.36 miles, or more than 5,330,000 ton-miles per year!

This road is a Tarviated highway, and in a very interesting article Mr. Gallier develops the fact that *every ten months* the saving in the cost of operating motor traffic over this highway, as compared with that on a well-drained clay road, *equals the total investment in the road for the past eighteen years.*

Space is too limited to give Mr. Gallier's figures in detail, but a copy of the article, which gives the history and maintenance figures of the road since 1900, will be sent to any interested road engineer or taxpayer upon request.

Briefly, the total investment in the road for 18 years, including three Tarvia treatments, is $99,367.63, or a trifle more than $13,500 per mile.

Figuring carefully and conservatively, Mr. Gallier has worked out the difference in cost of gasoline, tires and oil alone (not taking into account the saving in wear and tear on automobiles and trucks), for traffic over the Tarvia road as compared with the same traffic over a well-drained clay road. Reduced to totals, the figures are:

Total average daily cost of gasoline, tires and oil for motor traffic on clay road	$714.62
Total average daily cost of gasoline, tires and oil for motor traffic on Tarvia road	381.73
Daily difference in favor of Tarvia road	$332.89
Difference for 365 days	$121,475.85

This means a saving of $10,122.98 per month, or $101,229.80 every 10 months, which is more than the improved road cost to build and maintain for 18 years, including interest, engineering and drainage costs!

Tarvia is ready to serve other communities as it is serving this one, helping them to build and maintain mudless, dustless, automobile-proof roads at low cost—*roads that pay for themselves—roads that are an asset instead of a liability.*

Descriptive booklet telling all about this interesting proposition free on request.

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Preserves Roads–Prevents Dust

New York, Cleveland, Birmingham, Seattle, Youngstown, Chicago, Cincinnati, Kansas City, Peoria, Toledo, Philadelphia, Pittsburgh, Minneapolis, Atlanta, Columbus, Duluth, Richmond, Winnipeg, Milwaukee, Latrobe, Vancouver, Dallas, Bangor, Bethlehem, Boston, Detroit, Nashville, Washington, Elizabeth, St. Louis, New Orleans, Salt Lake City, Johnstown, Buffalo, Baltimore, Lebanon, Sydney, N.S.

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THE BARRETT COMPANY, Limited: Montreal, Toronto, St. John, N.B., Halifax, N.S.

When writing to Advertisers please mention THE AMERICAN CITY.

A little while afterward our truck was on the way with the load, and we were able to take advantage of the bonus offered. That serves to illustrate one of the possibilities."

The plant is equipped with small refrigerators for handling cream, of which large quantities are purchased, butter and other perishables, with storage rooms and candling apparatus for handling eggs expeditiously. Everything is on a cash basis, the farmer being paid for his produce upon receipt, and local merchants paying cash for whatever they buy from the market. This effects a considerable saving in clerical work.

A Mammoth Open-Air Swimming Pool

Artificial Beach and Excellent Bathing Facilities Provide Comfort for Many

THE village of Agawam, Mass., has one of the largest open-air swimming pools in the world. It measures 300 feet in diameter, and has a capacity of 2½ million gallons. The bottom slopes from very shallow water to a depth of five feet, dropping to eleven feet in the immediate vicinity of the diving platform. The pool is of concrete construction, and is circular in shape. A broad strip of sand runs round the edge, as the illustration shows, affording an ideal playground for children, as well as a basking-place.

The pool is fed thru a filtering system installed by the New York Continental Jewell Filtration Co., and tests have shown the water to be of high quality. Water is constantly flowing into the pool at such a rate that it cannot become foul. The excess water is carried off by an overflow that completely encircles the pool at its border.

A very effective lighting system has been installed for night bathing. At equal distances surrounding the pool are six floodlight projectors, and in the center of the pool is a cluster of sixteen 2,000-candlepower lamps. The combined power of these and the border lights renders every part of the pool almost as light as day, and forms a very effective display.

Modern bath houses accommodating 3,000 at one time are in the pool, and afford hot and cold showers, toilet accommodations and other up-to-date facilities. Two convenient features operated in connection with the bath houses are the laundry and the drying-room, where rented suits are laundered.

Atho the depth of the pool is such as to insure almost absolute safety to bathers, a life-guard with a small boat is kept on duty all the time.

THE LARGE OPEN-AIR SWIMMING POOL AT AGAWAM WHERE THOUSANDS OF SPRINGFIELD, MASS., CITIZENS ENJOY THE BATHING FACILITIES

Highest Efficiency in Water Works Practice

All water meters should be tested before they are installed, and periodically thereafter, to prove their accuracy. A defective meter may actually lose the water company or the city hundreds of dollars in revenue — by under-registering the amount of water consumed.

MUELLER
Water Meter Testers

are made from the best materials with the well known MUELLER precision of manufacture—in single and multiple construction—and are recognized as having the highest efficiency in water works practice.

Write for full description and prices.
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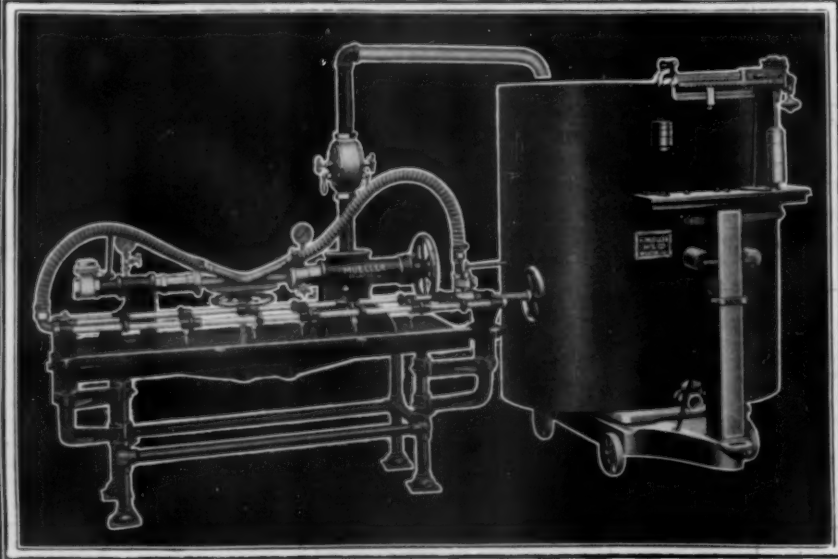

News and Ideas for Commercial and Civic Organizations

The International Club of Dallas

DALLAS, TEX.—The object of the International Club, which has existed in Dallas since the fall of 1918, is, as stated in its constitution, to "associate representatives of different racial descent in a mutual study and discussion of the peoples and nations of the world, their characteristics, manners and customs, as well as their art, literature, industry and national aspirations." The degree in which the races assimilate American civilization depends largely upon the point of view regarding our country obtained by the newcomers after reaching our shores. Their adjustment to the American ideal is simplified when Americanization work is predicated on the knowledge which this International Club is seeking to supply thru contact and friendly discussion.

The Club meets monthly in the headquarters of the Civic Federation of Dallas. Its membership is limited to two of each race or nationality. Each member may invite a guest. At present, Japan, Italy, Russia, France, England, Mexico, Switzerland, Holland, Greece, Syria, Sweden and the United States are represented. Hon. Rhodes Baker is President and K. Fukushima is Vice-President. The Executive Secretary of the Civic Federation of Dallas is Secretary of the Club.

The nucleus of a library has been formed. The American Association for International Conciliation, of New York, has been most generous and helpful in supplying books and other literature.

Three typical programs were those followed at the meetings of January, February and March, 1919: "The Russia of To-Day"; "Present Racial and Territorial Problems of Europe"; and "Labor Aims and Programs, National and International, as Typified in Russia, England, Japan and the United States."

The President, Mr. Baker, has well stated the functions of the Club, which are twofold—mutual intellectual profit for the members and the promotion of a better understanding of the motives actuating national policies. Both are processes of eliminating the word "foreigner" from the national language. The organization is seeking to expand provincial thinking into tolerance and rational understanding, and will encourage the presentation to the Dallas public of authoritative speakers on international affairs and relationships.

ELMER SCOTT,
Secretary, The International Club of Dallas.

Sacramento Votes Bonds for Water Filtration Plant

SACRAMENTO, CAL.—On June 26, 1919, by a vote of 7,065 to 3,122, the people of Sacramento decided in favor of issuing bonds for a water filtration plant. This goal was attained after years of endeavor and a most vigorous campaign by the Sacramento Chamber of Commerce. For fifty years Sacramento has been using the "raw" water from the Sacramento River. Until 1915, when a chlorination plant was installed, this water was a most dangerous source of typhoid epidemics. Chlorination effectively checked the disease, but the derogatory advertising given the city because of the extremely turbid nature of the water could not be overcome. The proper growth and expansion of the city was noticeably hampered, new residents and new industries being kept away by the objectionable water-supply.

The new president and secretary of the Chamber of Commerce realized that a clear and pure water-supply was absolutely essential to the development of the city, and they took steps at once to remedy the condition. A consulting engineer of San Francisco was employed to make an investigation and report, and in April, 1919, he made known his findings, which included a recommendation that a filtration plant be in-

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stalled as the best and most logical solution of the water-supply problem. His recommendation sustained the judgment of three other engineers who in 1916 had made a most exhaustive investigation of Sacramento's three possible sources of water-supply—filtered river water, a mountain water-supply, and a supply from an underground or well system. They recommended filtration.

In an exhaustive campaign of advertising and publicity, the Chamber of Commerce completely overcame the opposition to filtration arising from those who favored either a mountain water project or a system of wells. This publicity was not confined to the newspapers, but every conceivable means of putting the proposition forcefully before the public was employed. Billboards, window cards and motion picture theaters played a big part in the campaign. A motion picture scenario, strictly local in its nature, was written and filmed. This was a splendid means of contrasting the advantages and disadvantages of clear water and dirty water, respectively. Motion picture slides on the subject were shown in all the theaters. Samples of filtered and unfiltered water were secured from Cincinnati, St. Louis, Baltimore and New Orleans, and these, placed side by side in a window on the principal business street, convinced the people that filtration was not only practical, but was actually producing splendid results in certain large cities in the United States. Speakers presented the subject to many public gatherings. A poster with the words "Remove the Stain" and carrying an appeal to the civic pride of the citizens flared forth from windows and auto windshields. Huge signs covering both sides of a street car which ran over all the lines in the city had the effect of awakening the people to the issue facing them. A special "clear water" song was written and sung by the Chamber of Commerce male quartet in all parts of the city. A special "clear water" recitation given by a Sacramento youngster carried an appeal from the children's viewpoint. All these had the effect of creating a momentum of public opinion that swept away practically all opposition. The women were particularly interested in the campaign, since they suffered the greatest inconveniences from the muddy water. They voted almost unanimously in favor of issuing the filtration bonds.

POSTER USED IN THE CLEAR WATER CAMPAIGN IN SACRAMENTO, CAL.

The filtration and pumping plant will cost approximately $2,000,000 and will cover forty acres of land. The intake will have a capacity of 100,000,000 gallons daily, and the filters will have a daily capacity of 30,000,000 gallons. The capacity of the latter may be increased as the growth of the city demands. Sulphate of alumina is to be used as a coagulant. Construction work is to be started at once, and the plant is expected to be in operation before the close of next year.

IRVIN ENGLER,
Publicity Director, Sacramento Chamber of Commerce.

Ten-Story Penn-Harris Hotel Built by the Community

HARRISBURG, PA.—The newly opened Penn-Harris hotel in Harrisburg is a monument to the civic pride of the capitol city of Pennsylvania. It offers not only unrivaled facilities for the entertainment of conventions, but provides a community center for the assembling and entertaining of Harrisburg's residents. It fronts on Capitol Park and is one of a number of public buildings that are to be erected on sites facing the park and the capitol. The project involves an expenditure of $1,420,000. The lot cost $230,000, the building and equip-

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They are sturdy and stand up under all loads and on all roads.

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ment $995,000, and the furniture and furnishings $195,000.

The campaign for the erection of the hotel was launched and carried thru to a successful issue by the Chamber of Commerce, with the loyal support of the public-spirited citizens of the community. When it became apparent that outside capital would demand such exorbitant terms that the city would be the loser in the transaction, the Harrisburg Hotel Company was organized and incorporated. The Commonwealth Trust Company of Harrisburg agreed to advance one-half the cost of the hotel on first mortgage bonds if the other half were subscribed in cash. The stock was accordingly put on sale and was quickly taken up by the citizens. It is held by 427 stockholders, practically all of whom are residents of Harrisburg, or were when the project started, and have retained their shares even tho subsequent events caused them to leave the city. Three local business men each subscribed for $80,000 worth of the stock, three others took $25,000 each, and one individual took a block of $55,000 worth.

The hotel is operated by the United Hotels Company, which leases it from the owners, the Harrisburg Hotel Company. The latter holds 49 per cent of the common stock of the operating company.

An interesting feature of the campaign for the erection of this community hotel is that the popular subscriptions that built it were secured with the understanding that the hotel would sell no liquor. On this basis the stock found a ready sale in Harrisburg, which is surprising in view of the fact that the prospects at that time of the adoption of the national prohibition amendment had not become manifest.

The hotel is ten stories high and has 250 rooms, nearly all with bath. It covers a lot 17,000 feet square. A luxurious lounge, a ball room of pure Adam style, an assembly room adjoining, several private dining-rooms, a handsome grill in the basement, and numerous parlor suites round out the magnificence of the hotel. The first night it was open all the available rooms were occupied, and the accommodations for dancing, dining and other social functions had been engaged two months in advance, so that the people who owned stock in the company had no misapprehensions as to whether they would receive dividends upon their investment.

Rapidly mounting prices attendant upon the nation's participation in the war heaped numerous difficulties upon the builders, but the enterprising Chamber of Commerce men insisted on its completion despite the obstacles. The construction projects that

THE PENN-HARRIS HOTEL IN HARRISBURG, PA.

were being carried on by the War Department and the huge shell plants that were being operated in and near the city nearly drained the community's man power, but the work went on, the building rising story by story until its ten complete floors were reared above the flanking buildings.

WARREN R. JACKSON,
Secretary, Harrisburg Chamber of Commerce.

Seattle's Industrial Survey Being Made by Students

SEATTLE, WASH.—By making an intensive survey of her industrial resources and possibilities, Seattle has prepared for the post-bellum reconstruction period which will tax the industrial stability of the country to the utmost in the next eighteen months. With the cessation of war contracts, the city was confronted with a possible large surplus of workers along various industrial lines and with a wealth of raw materials. As a re-

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sult of the survey, the city expects to keep busy and even to increase its army of industrial workers.

Thru the Industrial Bureau of the Seattle Chamber of Commerce and Commercial Club and the University of Washington, a survey of opportunities is being made along more than fifty different lines. Among them are iron and steel products, the development of pulp resources and the tanning industry.

Just how Seattle attacked the problem is interesting. Thirty-five graduates and seniors from the College of Business Administration and the Department of Industrial Chemistry were enrolled in a special seminar course and used the city and the surrounding country as a laboratory. Each group of students was assigned one industry. Interviews supplemented by intensive research and a survey of the field gave them a grasp of the situation as it existed in Seattle. The problems were attacked from every angle. An experienced business man, who is a college graduate, represented the university. The directing of the survey was carried on thru the Industrial Bureau's offices, in order that it might at all times follow strict business principles. Experts in each line were consulted; separate surveys of raw materials were conducted, and the result is that Seattle has laid the foundation for an intensive industrial opportunity inventory.

With the city's vast foreign trade, embracing South America, Australia and all of the Orient, as well as Siberia and Alaska, markets are constantly being opened, new sources of raw materials are being found, and Seattle is collecting these facts and adding them to the city's manufacturing catalog.

The survey has been arranged in three phases: the local, which embodies the work of the students and the Industrial Bureau; the eastern, which is covered by an engineer and public-spirited business man; and the comparative, which will show definitely Seattle's present and future advantages along each specific line in comparison with its eastern competitors. Raw materials, markets, sales expense and labor are being investigated. In fact, all the information that can be used as a basis for comparison is being gathered. It is expected that the facts collected will be published in bulletin form by the University and the Chamber of Commerce for distribution.

Using the data thus assembled, the Industrial Bureau has planned to launch a nation-wide campaign to interest the right men with experience and capital in the profitable openings for manufacturers in Seattle.

I. R. A. CURRY,
Industrial Bureau, Seattle Chamber of Commerce and Commercial Club.

Cincinnati's Bureau of Industrial Counseling

CINCINNATI, OHIO. — The Cincinnati Chamber of Commerce recently organized a Bureau of Industrial Counseling whose purpose is to offer to employers information and consultation service on all phases of employment problems connected with women in industry. The steps leading to the organization of this plan are significant. During the war the Ordnance Department realized that in order to keep production at a maximum it was necessary to provide the machinery for labor adjustments. To meet this need, the Industrial Service Section was organized and placed under the Production Division. It was the function of this section to act as a mediator in smoothing out and regulating all conditions that were obstructing labor efficiency. Adjustments in shop conditions, recruiting, training, transportation, housing, and labor disputes, all came within its jurisdiction. A special branch was provided for handling problems relating to women employes.

The Cincinnati Chamber of Commerce felt that the principle of this work—good labor conditions for efficient business—was a basic one in business life, and that it would be valuable to conserve for local use in Cincinnati as much as possible of the material and experience that had accrued during the war. Hence the present Bureau of Industrial Counseling.

The work is being organized and directed by Miss Edith Campbell, who was supervisor of the Women's Branch in the Cincinnati District of the Ordnance Department. She comes equipped with valuable experience in that work, and in the activities of the Schmidlapp Bureau for Women and Girls, of which she has been director since its foundation by J. G. Schmidlapp in 1907. This bureau has initiated and furthered a number of civic and educational plans for women and is

HANDLING the mails in Christiania, Norway, or flushing the streets in Caldwell, Idaho—doing the most exacting tasks, the world over—Denby trucks are, day in and day out, giving dependable, economical service.

For Denby Trucks combine, in an unusual degree, the two prime requisites of good truck performance,—the ability to give continuous service under all conditions and to operate at a cost that makes them an investment that pays big dividends.

The oval shows part of the post office fleet operating in Christiania, Norway. The other illustration, a 4 ton Denby owned by the City of Caldwell, Idaho.

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Denby Motor Truck Company, Detroit

DENBY
MOTOR TRUCKS

now making possible this new enterprise for the Chamber of Commerce.

The work of the Chamber of Commerce bureau centers about four points:

1. Giving confidential advice after study of problems in the individual plants
2. Rendering assistance in selecting women supervisors for industrial establishments and in organizing their duties
3. Giving information on successful employment methods
4. Securing expert advice from cooperating organizations

C. R. HEBBLE,
Executive Secretary, Cincinnati Chamber of Commerce.

New Bulletins

COLUMBIA, S. C.—*The Courier*, the official monthly bulletin of the Columbia Chamber of Commerce.

KEY WEST, FLA.—*Key West Breezes*, the official monthly bulletin of the Key West Chamber of Commerce.

KNOXVILLE, TENN.—*The Bulletin*, published monthly by the Knoxville Board of Commerce.

MARSHALL, TEX.—*Marshall*, the official monthly bulletin of the Marshall Chamber of Commerce.

ROANOKE, VA.—*A Letter to The Members of The Association of Commerce*, issued by the Roanoke Association of Commerce.

Recently Issued Printed Matter

ALBANY, N. Y.—"Albany Welcomes You" is the title of a booklet recently issued by the Albany Chamber of Commerce. The "Bull's Eye Bulletin of Albany's Industries" is the title of another booklet issued by the same organization.

CINCINNATI, OHIO.—The Cincinnati Chamber of Commerce and Merchants' Exchange has just issued its Seventieth Annual Report, for the year ending December 31, 1918.

DALLAS, TEX.—The Metropolitan Development Association of the Dallas Chamber of Commerce has issued a prospectus of its work entitled "Dallas—The Metropolis of the Southwest."

HAZLETON, PA.—The Secretary of the Hazleton Chamber of Commerce has issued his annual report.

JOLIET, ILL.—The Joliet Association of Commerce has issued its annual report for the year ending May 31, 1919, entitled "Activity of the Joliet Association of Commerce."

PARIS, ILL.—The July issue of the Paris *Chamber of Commerce Bulletin* contains an account of "What the Chamber of Commerce Has Accomplished During the Past Six Months."

ST. LOUIS, MO.—"A Review of the Work of the Charities Bureau" of the St. Louis Chamber of Commerce has recently been published by the Chamber of Commerce.

SAULT STE. MARIE, MICH.—The Fourth Annual Report of the Civic and Commercial Association of Sault Ste. Marie, for the year ending June, 1919, has been issued.

THE OHIO COMMERCIAL SECRETARIES' ASSOCIATION.—The proceedings of the third annual convention of the association, held in Akron, Ohio, May 16-17, 1919, has been issued.

Changes Among the Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

J. M. ASHLEY has resigned the secretaryship of the Valdosta, Ga., Chamber of Commerce, to accept the position of manager of the Lowndes County Market Association.

H. C. BEDELL is the new secretary of the Commercial Club at Hale, Mo., succeeding Blain W. Good.

E. D. BEVITT, of Jamestown, N. Y., has been elected secretary of the Board of Commerce at Lockport, N. Y., succeeding Raymond B. Gibbs, who has resigned to accept the secretaryship of the Chamber of Commerce at Kansas City, Kans.

L. G. BRADSTOCK has been elected secretary of the Wellington, Ohio, Chamber of Commerce.

T. J. BROWN has resigned the secretaryship of the Chickasha, Okla., Chamber of Commerce.

R. W. BUDD, of Waterbury, Conn., has been elected secretary of the Chamber of Commerce at Okmulgee, Okla.

FREDERICK W. BURTON has been appointed Traffic Director of the Rochester, N. Y., Chamber of Commerce, succeeding D. P. Chindblom.

J. H. CALDWELL is the new secretary of the Commercial Club at Mammoth Spring, Ark.

W. T. CANAN has been appointed assistant secretary of the Altoona, Pa., Chamber of Commerce.

GEORGE E. COMER, formerly assistant secretary of the Bristol, Va.-Tenn., Chamber of Commerce, has been elected secretary of the Carrollton, Ga., Chamber of Commerce.

HARRY E. COVEY has been elected secretary of the Kansas, Ill., Commercial Club.

GEORGE H. COX has resigned the secretaryship of the Kenton, Ohio, Chamber of Commerce, to assume the secretaryship of the Board of Commerce at Troy, Ala.

WALTER A. DOWLING has been appointed secretary of the Cisco, Tex., Chamber of Commerce. Mr. Dowling was formerly assistant secretary of the Chamber of Commerce of Tulsa, Okla.

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BURCH STONE SPREADER

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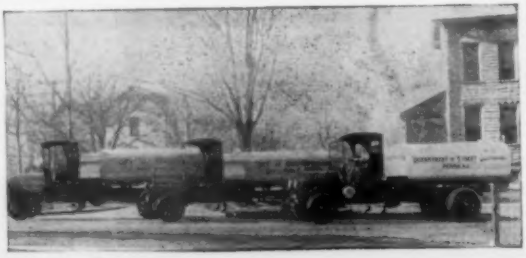

Literature upon request

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CARL DODDS has resigned the secretaryship of the Chamber of Commerce at Maysville, Ky., to assume the secretaryship of the Board of Trade at Northampton, Mass.

W. D. DRISCOLL has tendered his resignation as secretary-manager of the Waco, Tex., Chamber of Commerce, to become manager of the Oklahoma Traffic Association, with headquarters at Oklahoma City.

E. N. FARRIS has resigned the secretaryship of the Charlotte, N. C., Chamber of Commerce.

P. A. FENIMORE has been elected secretary of the Mobile, Ala., Chamber of Commerce. Mr. Fenimore was formerly secretary of the Chamber of Commerce at Birmingham, Ala.

ARTHUR M. FIELD has resigned the secretaryship of the Winchester, Va., Chamber of Commerce, to enter into partnership with Charles C. Hopkins. They have established offices in Rochester, N. Y., as consulting engineers.

T. C. FITZ GIBBON has resigned the secretaryship of the Sharon, Pa., Chamber of Commerce, to become associated with the Pacific Coast office of the American City Bureau.

J. C. FOWLER has resigned the secretaryship of the Chamber of Commerce at Pittsburg, Kans.

W. H. GORDON, of Chassell, Mich., has been elected secretary of the Commercial Club of Marquette, Mich.

M. D. GRIFFITH has resigned the secretaryship of the Beaver Falls, Pa., Chamber of Commerce, to accept the secretaryship of the reorganized Chamber of Commerce at Elizabeth, N. J.

FRANK T. HILL is the new secretary of the Commercial Club at Walker, Ia.

P. E. HOPPER is the new secretary of the Chamber of Commerce at Elk City, Okla.

L. E. ILIFF is the new secretary of the Richmond, Ind., Commercial Club.

W. H. JONES has been elected secretary of the Chamber of Commerce at Broken Bow, Ark.

F. A. LEFFINGWELL has been elected manager of the Chamber of Commerce, Waco, Tex. Mr. Leffingwell was formerly assistant traffic commissioner of the Houston, Tex., Chamber of Commerce.

E. T. MCBIRNEY, of Newport, Ky., has been elected secretary of the Chamber of Commerce of Ashland, Ky.

GEORGE MCGREGOR is the new secretary of the Guthrie, Okla., Chamber of Commerce.

ROBERT H. MANLEY has tendered his resignation as Commissioner of the Chamber of Commerce of Omaha, Nebr., to become associate general agent of the Northwestern Mutual Life Insurance Company, with headquarters at Omaha.

R. R. MARLIN, ex-mayor of Dawson, Ga., has been elected secretary of the Chamber of Commerce of that city, to succeed W. B. Parks, resigned.

MEREDITH MEYERS is the new secretary of the Chamber of Commerce of Lewistown, Pa.

J. E. NORTH has resigned the secretaryship of the Springfield, Ohio, Chamber of Commerce, to accept a position as manager of Our Stores Co., at Springfield.

W. C. POINTER has been elected secretary of the Chamber of Commerce at DeWitt, Ark.

J. H. RAYBURN has been elected secretary of the Commercial Club at Scott Bluff, Nebr.

GEORGE J. ROARK, formerly assistant secretary of the Chamber of Commerce at San Antonio, Tex., has been elected general manager of the Chamber of Commerce at Beaumont, Tex., succeeding Garland S. Brickey.

EDWARD J. SAMP, of Madison, Wis., has been elected secretary of the newly organized Chamber of Commerce at Niles, Ohio.

JOHN G. SCHERF has resigned the secretaryship of the Concordia, Kans., Chamber of Commerce to accept a similar position with the Chamber of Commerce at Andalusia, Ala.

MANDEL SENER, of Hagerstown, Md., has been elected secretary of the Kenton, Ohio, Chamber of Commerce, succeeding George H. Cox.

D. B. STALEY has been elected secretary of the Chamber of Commerce at Chambersburg, Pa.

H. MAYNE STANTON is the new secretary of the Bemidji, Minn., Commercial Club.

ELMER B. STAUDT is the new secretary of the Board of Trade at Pennsburg, Pa.

A. J. STOWE has resigned the secretaryship of the Pella, Ia., Commercial Club.

WILLIAM A. TROWBRIDGE has resigned the secretaryship of the Carthage, N. Y., Chamber of Commerce, to accept the secretaryship of the Chamber of Commerce at Mechanicsville, N. Y.

CLARENCE WALTERS, of Duncan, Okla., has been elected secretary of the Commercial Club at Yoakum, Tex.

W. T. WHEELER has resigned the secretaryship of the Young Men's Business League of Waco, Tex., to become organization director of the West Texas Chamber of Commerce.

CAPTAIN RAY WHYTE has been appointed secretary of the Danville, Ind., Chamber of Commerce.

P. L. WILLS has resigned the secretaryship of the Chamber of Commerce at Danville, Ill., to become associated with the Pacific Coast office of the American City Bureau.

CARROLL R. WOODS, formerly secretary of the Shelbyville, Ind., Chamber of Commerce, and late with the United States Army, has been elected secretary of the Bluefield, W. Va., Chamber of Commerce.

C. G. YORAN has been elected secretary of the Commercial Club of Manchester, Ia.

Austin Western

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The Austin Western is recognized as the most complete line of road equipment on the market. The Austin Western leads the world in the development of improved machines and does not merely follow with imitations. It holds that position because it is always growing, and devising new or improving old methods as road builders demand them.

Here are two new Austin-Western methods:

1. THE WESTERN ROAD PLANER ATTACHMENT

—a new and ingenious way of using an old grader or fitting up a new one. This attachment can be fitted to the Austin or Western grader or any other grader having a long rear axle. It is the most successful, yet simple, and thoroughly practical, road machine ever added to the grader line. It will plane and level rutted roads three or four times as fast as an ordinary grader blade works. In road dragging it does the work of six drags, six men and twelve horses. You can save hundreds of dollars with this new road machine. Send for folder giving full particulars.

2. THE WESTERN MIDGET—The maintenance man's "Mascot"

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The City's Legal Rights and Duties

A Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Accounting by City Treasurer

When there is no statutory or charter requirement that a municipal treasurer or collector of taxes put city funds out at interest, he discharges his full duty to the municipality by accounting for all funds received by him, with any accumulation of interest thereon. Neither he nor his surety will be liable because he deposits funds in a bank without any agreement as to the rate of interest to be paid, or even makes non-interest-bearing deposits. (Massachusetts Supreme Judicial Court, City of Lowell vs. Stiles, 122 Northeastern Reporter, 412.)

Sewer Construction Contracts

A city's acceptance of a sewer constructed by a contractor, and payment of the contract price, did not preclude it from afterward enforcing a claim against him for damages for failing to do the work in accordance with the contract plans and specifications, as to defects in the construction not known to the city and not discoverable on an ordinary inspection. Under an agreement for performance of work in the best manner and use of best materials, in accordance with plans and specifications, a municipal engineer's approval of defective work does not release the contractor from liability for failing to follow the plans and specifications. And where a sewer construction contract specified that the engineer was without authority to accept or reject the work, the contractor had no right to assume that the engineer could permit any deviation from the terms of the contract in the manner of doing the work. When a sewer contractor has failed to do work according to the plans and specifications forming part of the contract, the city is entitled to judgment covering the reasonable cost of making the work conform to the contract. (Oregon Supreme Court, City of Seaside vs. Randles, 180 Pacific Reporter, 319.)

Power to Annex Territory

The fact that half of the area of a small but growing town may remain unimproved does not necessarily establish unreasonableness of a plan for the annexation of territory adjacent to the municipal boundaries. Where such a town is surrounded by the mills of lumber companies, the properties of which include the living quarters of employes, and where the people of the town and the officers and employes of the companies live and work in such relationship as to form a single community, it is reasonable that such adjacent properties be annexed to the town, for the purpose of subjecting the entire community to the same police and sanitary regulations. (Louisiana Supreme Court, Bowman-Hicks Lumber Co. vs. Town of Oakdale, 81 Southern Reporter, 367.)

Maintaining Public Baths

A city maintaining a bath-house for free use of the public is not liable for money lost from a bather's clothing hung by him on a hook, in the absence of proof of negligence on the part of the city's employes in charge of the place, and in the absence of proof of exercise of due care on the bather's own part. His knowingly leaving his clothing in an unlocked compartment, without any intimation to the attendant in charge that there were valuables in them, prevents him from enforcing a claim against the city. (New York Supreme Court, Walker vs. City of Buffalo, 175 New York Supplement, 274.)

Municipal Debt Limits

The provision of the Washington constitution limiting the amount of indebtedness that may be created by a city does not apply to the purchase of a street railroad or other public utility to be paid for by bonds payable from the revenues of the utility. (Washington Supreme Court, Twichell vs. City of Seattle, 179 Pacific Reporter, 127.)

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Advance-Rumely was a pioneer in the making of internal combustion engines and ten years' experience has proved many things. It has proved the correctness of the OilPull design, its ability to successfully burn cheap kerosene and its absolute dependability during years of continuous service.

Advance Rumely has refused to be influenced to build its product to meet a price. Instead, its policy has been to build the OilPull tractor to meet a definite need. Large production reduces the price to the minimum, consistent with high quality.

As a successful outfit for road work, the record of the OilPull best speaks for itself.

The OilPull tractor is built in four sizes—12-20, 16-30, 20-40 and 30-60 H. P. —oil cooled, guaranteed oil burning and fully warranted as to capacity.

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La Porte, Indiana

ADVANCE-RUMELY

Telegraph Pole Taxes

A tax imposed by the city of Richmond of $2 on each telegraph pole maintained in the city by plaintiff is valid, being reasonably proportionate to compensation for use of the street and for expenses of inspection, altho necessitating contribution from interstate business. (United States Supreme Court, Postal Telegraph-Cable Co. vs. City of Richmond, 39 Supreme Court Reporter, 265.)

Vote Required to Authorize Bonds

Under a statute authorizing issuance of municipal bonds on the assent of two-thirds of all the voters of the city "voting at an election to be held for that purpose," bonds may be issued on affirmative vote of two-thirds of those voting on the proposition, altho less than two-thirds of all votes cast in the general election at which the proposition was submitted. (Missouri Supreme Court, State ex rel. Kansas City vs. Orear, 210 Southwestern Reporter, 392.)

Nature of Municipal Corporations

A municipal corporation is but a branch of the state government established to aid the legislature in providing for the welfare of the public within the territory for which the municipality is organized. (California District Court of Appeal, Akerman vs. Moody, 176 Pacific Reporter, 696.)

Abandoning Local Improvements

A municipal corporation has the lawful right to abandon a local improvement project, altho assessment rolls to cover the cost have been made and spread. (Illinois Supreme Court, Gray vs. City of Joliet, 122 Northeastern Reporter, 550.)

Licensing Business Locations

The ordinances of the city of High Point, N. C., vest in the City Manager power to license locations for meat markets, with provision for referring applications to the City Council in cases of doubt. It is held by the Supreme Court of the state, in the case of McIntyre vs. Murphy, 98 Southeastern Reporter, 820, that refusal of the municipal authorities to grant a license to conduct a market at a certain place, on the ground that the market would constitute a nuisance in the locality, will not be interfered with by the courts in the absence of proof that the refusal was arbitrary and unreasonable.

Validity of Billboard Regulations

An ordinance of the city of St. Louis is valid in its provisions limiting the area of billboards to 400 square feet, and their height to 14 feet above the ground; requiring a space of 4 feet between the bottom and the ground, and forbidding construction nearer than 6 feet to a building or the side of a lot, or within 2 feet of each other, or within 15 feet of the street line. If the main provisions of a billboard regulation bear proper relation to the public safety, it will not be held to be invalid because in some of its minor aspects it deals with uniform building lines, or other esthetic considerations. It is within the power of a city to discourage the construction of billboards by heavily taxing them. Restrictions imposed by ordinance are not to be invalidated because a billboard owner may have previously made advertising contracts which are rendered burdensome by such restrictions. (United States Supreme Court, St. Louis Poster Advertising Co. vs. City of St. Louis, 39 Supreme Court Reporter, 274.)

Ratifying Unauthorized Contracts

A municipal corporation is bound by a contract to purchase property made on its behalf by an unauthorized agent, where the transaction is within the scope of municipal affairs and the proper authorities signify a purpose to ratify the purchase. Hence, where water meters were sold and delivered to a city owning a water-supply system, upon an order given by the clerk of the city water board, and the city received the meters and paid for their installation, there was an implied ratification of the purchase, rendering the city liable for the agreed price. (West Virginia Supreme Court of Appeals, Union Water Meter Co. vs. Town of New Martinsville, 98 Southeastern Reporter, 516.)

Assessments Against County Property

Under the laws of Colorado a city is entitled to levy special improvement assessments against property owned by the county in which the city is situated, and can enforce the same by bringing suit against the county to collect the amount due. (Colorado Supreme Court, Board of Commissioners of El Paso County vs. City of Colorado Springs, 180 Pacific Reporter, 301.)

Another FEDERAL

"Shorten the miles to market—build better roads."

Combination chemical and hose cart recently purchased by the Midland Fire Dept., Paterson, N. J.

Federal-ized Fire Fighting in Paterson, N. J.

Guardians of human life and public property, municipal fire departments carry a burden of responsibility second to no other branch of civic government.

In the stern business of fire fighting, nothing but the most efficient and reliable of equipment can be tolerated.

For this reason, *good* motor trucks are replacing horse equipment universally.

And among the comparatively few makes of trucks so chosen, the growing number of Federals is significant of Federal dependability, speed, and ability to give year-round satisfaction.

"Traffic News," an interesting motor truck magazine, will be mailed on request.

FEDERAL MOTOR TRUCK COMPANY
34 FEDERAL STREET DETROIT, MICH

FEDERAL

One to Five Ton Capacities

Constitutional Debt Limit

Under provisions of the Kentucky constitution, limiting the power of certain cities to incur indebtedness to three per cent of the aggregate value of the taxable property of the city, excepting as the public health or safety may create an emergency requiring the limit to be exceeded, it is held by the Kentucky Court of Appeals that, altho an emergency might arise for the acquisition of a water system, the city would not be justified in exceeding the debt limit for the purpose of acquiring a joint water system and electric light plant. (Samuels vs. City of Clinton, 211 Southwestern Reporter, 567.) Speaking of the object intended to be accomplished by the constitutional limitation, the Court remarks that the provisions "were intended by the people to protect themselves against themselves, when they should act under sudden impulse, or from expectations growing out of mistaken optimism, as to advantage and ability to pay, and thus burden themselves with public debts, for which they would receive in the end no fair consideration, and beyond the reasonable ability of municipalities to pay, and to protect the minority against the excessive optimism of the majority, but it was not intended by the section to deprive the municipality of all remedy necessary to preserve its health and safety, when an unexpected and hard-pressing necessity makes such remedy necessary."

But, applying the limitation to electric light plants proposed to be acquired by small municipalities, the Court adds:

"While an electric light plant and a system of electric lights is a great convenience and a most delightful and desirable luxury to the inhabitants of a municipality of the fifth class, the necessity of having one for safeguarding the public health or public safety is not so great as to create an emergency which would authorize the municipality to create an indebtedness beyond the 3 per cent fixed by section 158 of the constitution."

On the Calendar of Conventions

AUGUST 12-14.—KINGSTON, ONT.
Union of Canadian Municipalities. Annual convention. Secretary, W. D. Lighthall, Montreal Trust Building, Montreal, Que.

AUGUST 12-14.—WEST ALLIS, WIS.
League of Wisconsin Municipalities. Annual convention. Secretary, Ford H. MacGregor, Madison, Wis.

AUGUST 19-29.—CHAUTAUQUA, N. Y.
Open Forum National Council. A Summer School of Open Forum Methods. Secretary, Harold Marshall, 359 Boylston Street, Boston, Mass.

AUGUST 26-28.—HARTFORD, CONN.
American Association of Park Superintendents. President, J. F. Foster, South Park System, Chicago, Ill.

AUGUST 26-28.—ALLENTOWN, PA.
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

AUGUST 26-28.—TORONTO, ONT.
Ontario Municipal Association. Annual meeting. Secretary, B. H. Spence, 705 Lumsden Building, Toronto, Ont.

AUGUST 26-29.—TORONTO, ONT.
Fire Marshals' Association of North America. Annual convention. Secretary, John G. Gamber, Springfield, Ill.

AUGUST 27-29.—YARMOUTH, N. S.
Union of Nova Scotia Municipalities. Annual convention. Secretary, Arthur Roberts, Town Solicitor, Bridgewater, N. S.

AUGUST 28-29.—MADISON, WIS.
Centralized Buying Conference, for representatives of state and federal purchasing departments. First national conference. Address M. F. Blumenfeld, Superintendent of Public Property, State House, Madison, Wis.

SEPTEMBER 17-19.—MUSCATINE, IOWA.
League of Iowa Municipalities. Annual convention. Secretary, Frank G. Pierce, Marshalltown, Iowa.

SEPTEMBER 23-24.—DANVILLE, VA.
League of Virginia Municipalities. Annual convention. Secretary, L. C. Brinson, Portsmouth, Va.

SEPTEMBER 23-26.—CHICAGO, ILL.
International Association of Municipal Electricians. Annual convention. Secretary, Clarence R. George, Houston, Tex.

SEPTEMBER 29—OCTOBER 2.—CLEVELAND, OHIO.
National Safety Council. Eighth Annual Safety Congress. Secretary, S. J. Williams, 208 La-Salle Street, Chicago, Ill.

SEPTEMBER 30—OCTOBER 3.—ALBANY, N. Y.
New England Water Works Association. Annual convention. Secretary, Willard Kent, Narragansett Pier, R. I.

OCTOBER 2-5.—URBANA, ILL.
Better Community Conference. Held under the auspices of the University of Illinois. Address R. E. Hieronymus, Community Adviser, Urbana, Ill.

OCTOBER 8-10.—ATCHISON, KANS.
League of Kansas Municipalities. Annual convention. Secretary, Albert A. Long, University of Kansas, Lawrence, Kans.

OCTOBER 27-29.—INDIANAPOLIS, IND.
National Association of Commercial Organization Secretaries. Annual convention. Secretary, Willis Evans, Association of Commerce, Peoria, Ill.

OCTOBER 27-30.—NEW ORLEANS, LA.
American Public Health Association. Annual meeting. Secretary, A. W. Hedrich, 169 Massachusetts Avenue, Boston, Mass.

OCTOBER 29-31.—PHILADELPHIA, PA.
American Civic Association. Annual convention. Secretary, E. E. Marshall, Union Trust Building, Washington, D. C.

NOVEMBER 12-14.—NEW ORLEANS, LA.
American Society of Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, 304 East Walnut Street, Bloomington, Ill.

Shale that Machine Cut at 3 Ft. Per Minute

660 Ft. In 3 Hours

During 1915, considered an ordinary year, the city laid 25,000 ft. of 6- and 12-in. mains in hand excavated trenches at a labor cost for digging, laying and back-filling of 28.8c. a foot for the smaller and 36.08c. a foot for the larger size. Much more pipe was laid in 1916 and this year because of the rapid growth of the city. While complete unit costs for the last year's work have not yet been compiled, it is known that rising wages caused considerable increase over those of 1915. Records for 10,000 ft. of 6-in. main laid at one time last year show a total labor cost of 37.1c. per foot, of which digging alone represented 19c. with common labor 27½c. an hour. The trench was in clay, with shale at the bottom. As compared with this, the first performance with the trenching machine, excavating for 1620 ft. of line, was accomplished at a fuel and labor cost of $132.84, or 8.2c. per foot for actual digging. This was in gravel which required sheeting, the cost of which is included in the above figure. On another occasion, in digging through cut-over land, where many large but partly rotted stumps were cut through, 682 ft. of trench was dug in four hours, at a cost of $7.55 for three men and 15 gal. of gasoline—only 1.1c. per foot. On Oct. 5 the machine made its speed record of 660 ft. in three hours, but $3.02 for gasoline and $1.88 for the wages of the engineer and helper being charged to the operation. This was about ¾ of a cent per foot. Both trenches were in shale at the bottom.

Waterworks Men!

Look to your costs in these days of high prices and wages. The P & H Excavator purchased by the Erie, Pa., Water Dept. (by whom the record shown here was made) returned half its cost on four miles of mains.

P & H Equipment covers every phase of the job from the opening of the trench to getting the backfill back quickly and compactly. Send for general catalog.

PAWLING & HARNISCHFEGER CO.

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P&H excavators, back-fillers, tampers.

Complete List of City Manager Cities

Arranged Alphabetically According to States

THE following list of city managers in the United States is believed to be complete and accurate at the date of compilation, July 30, 1919, but the editors of THE AMERICAN CITY will appreciate having their attention called to any errors or omissions. The letters following the names of cities indicate type of manager form: C, an approved city manager charter; C—, a modified city manager charter; O, an ordinance-created manager plan.

Arizona		
Phœnix	C	V. A. Thompson
Arkansas		
Bentonville	O	Edgar Masoner
Hot Springs	C	George R. Belding
Monticello		H. T. Slemons
California		
Alameda	C	Charles E. Hewes
Alhambra	C—	Frank L. Hilton
Bakersfield	C	Mr. Harris
Glendale	O	T. W. Watson
Redding	O	E. A. Rolinson
San Anselmo	O	C. A. Macomber
San Diego	C—	
San José	C	Dr. Willard C. Bailey
Santa Barbara	C	Robert A. Craig
Colorado		
Boulder	C	W. D. Salter (acting)
Durango	C	A. F. Hood
Montrose	C	Cassius C. Smith
Florida		
Gary	C	J. A. O'Berry
Largo	O	W. H. Turner
Ocala	C	R. M. Martin
St. Augustine	C	Eugene Masters
Georgia		
Cartersville	C	Abram Cook
Griffin	C	E. P. Bridges
Rome	C	Sam S. King
Illinois		
Glencoe	O	H. H. Sherer
Wilmette	O	C. C. Schultz
Winnetka	O	H. L. Woolhiser
Iowa		
Anamosa	O	W. F. Hathaway
Clarinda	O	Henry Traxler
Estherville	O	F. G. Connelly
Iowa Falls	O	J. O. Gregg
Manchester	O	Thomas Wilson
Mt. Pleasant	O	T. W. McMillan
Villisca	O	W. J. Oviatt
Webster City	C	G. J. Long
Kansas		
El Dorado	C	Bert C. Wells
Hays	C	James C. Manning
Hudson	C	A. B. Hungerford
McCracken	C	Leonard L. Ryan
Wichita	C	Louis R. Ash
Kentucky		
Cynthiana	O	J. J. Curle
Maine		
Auburn	C	E. A. Beck
Massachusetts		
Norwood	C—	Wm. P. Hammersley
Waltham	C	Clarence A. Bingham
Michigan		
Albion	C	Walter E. Baumgardner
Alpena	C	Charles T. Park
Big Rapids	C	Dan H. Vincent
Birmingham	C	M. Lowman
Cadillac	C	George Johnston
Crystal Falls	C	J. H. Sanders
Eaton Rapids	O	O. S. Yager
Grand Haven	C—	I. R. Ellison
Grand Rapids	C	Fred H. Locke
Grosse Pointe Shores	O	Homer N. Kennedy
Jackson	C	A. W. D. Hall
Kalamazoo	C	Harry H. Freeman
Lapeer	C	Ray S. Blinn
Manistee	C	P. H. Beauvais
Otsego	C	Gerard A. Abbott
Petoskey	C	James E. Niles
Portland	C	F. L. Jenkins
Royal Oak	C	George E. Weitzel
St. Johns	C—	A. D. Smith
Sault Ste. Marie	C	Wilder M. Rich
Three Rivers	C	O. O. Johnson
Minnesota		
Anoka	O	Henry Lee
Morris	C—	Frank J. Haight
Pipestone	O	F. E. Cogswell
Montana		
Columbus	O	Fred Fahrion
Glasgow	O	Harvey Booth
New Mexico		
Albuquerque	C	A. R. Hebenstreit
Roswell	O	Arthur G. Jaffa
New York		
Newburgh	C	James Miller
Niagara Falls	C	Edwin J. Fort
Sherrill	C	Chester A. Brown
North Carolina		
Elizabeth City	C	F. W. Simonds
Gastonia	C	
Goldsboro	C	I. M. Cashell
Hickory	C	I. W. Ballew
High Point	C—	R. L. Pickett
Kinston	O	Wm. B. Coleman
Morehead City	O	W. B. Allred
Morgantown	C	W. R. Patton
Tarboro	O	J. H. Jacocks
Thomasville	C—	Ira Johnson
North Dakota		
Carrington	O	F. J. Beier
Ohio		
Ashtabula	C	M. H. Turner
Dayton	C	James E. Barlow
E. Cleveland	C	C. M. Osborn
Gallipolis	C	Edward E. Meyers
Sandusky	C	George M. Zimmerman
So. Charleston	C	P. H. Cheney
Springfield	C	O. E. Carr
Westerville	C	Ralph W. Orebaugh
Xenia	C	Kenyon Riddle
Oklahoma		
Collinsville	C	F. A. Wright
Madill	C	A. P. Marsh
Mangum	C	R. B. Snell
Weatherford	C	G. H. Critchfield
Oregon		
La Grande	C	John Collier
Pennsylvania		
Altoona	O	H. Gordon Hinkle
Ambridge	O	R. H. Hunter
Bethlehem	O	Winton L. Miller
Edgeworth	O	Wilbur M. Cotton
Mifflinburg	O	Wm. D. Kochersperger
Philipsburg	O	Roy Wilkinson
Sewickley	O	Wilbur M. Cotton
Towanda	O	W. T. Howie
South Carolina		
Beaufort	C	Hal R. Pollitzer
Rock Hill	C	J. G. Barnwell
Sumter	C	E. S. Shuler
South Dakota		
Clark	O	J. E. Smith
Tennessee		
Kingsport	C	William R. Pouder
Texas		
Amarillo	C	Jeff D. Bartlett
Brownsville	C	William E. Anderson
Brownwood	C—	E. R. Brashear

HOW are you cleaning your catch basins and sewers? In the old slow, expensive and disease-breeding way, with piles of filth on your streets? Or the "SECO" way?

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Bryan	C	J. W. Greer
Denton	C	H. V. Hennan
Eastland	O	Walter Lander
Electra	O	W. H. Larson
Lubbock	C	Martin S. Ruby
Lufkin	C	L. Mitchell
Ranger	C	M. A. Turner
San Angelo	C	E. L. Wells, Jr.
Sherman	C	O. J. S. Ellingson
Stamford	C	Edgar A. Burrow
Taylor	C	A. V. Hyde
Teague	O	E. B. St. Clair
Terrell	C	E. D. Kelly
Tyler	C	Henry J. Graeser
Yoakum	C	Vacant
Utah		
Brigham City	O	Charles O. Roskelley
Virginia		
Blackstone	O	R. B. Stone
Charlottesville	O	Shelton S. Fife
Farmville	O	Leslie Fogus
Fredericksburg	O	L. J. Houston, Jr.
Norfolk	C	Charles E. Ashburner
Portsmouth	C	W. B. Bates
Roanoke	C	William P. Hunter
Staunton	O	S. D. Holsinger
Winchester	O	Thomas J. Trier
West Virginia		
Charleston	C—	Bonner Hill
Wheeling	C	Charles O. Ephlin

City manager government has been adopted in the following cities, taking effect after July 30, 1919:

		Effective
California		
Fresno	C	Operation postponed
Salinas	C	
New York		
Auburn	C	January 1, 1920
Watertown	C	January 1, 1920
Ohio		
Akron	C	January 1, 1920
Oklahoma		
McAlester	C	1920
Tennessee		
Alcoa	C	July, 1919
Virginia		
Bristol	C	Sept., 1919
Petersburg	C	June, 1920
Suffolk	C	Sept., 1920

Municipal and Civic Publications

See also Department of News and Ideas for Commercial and Civic Organizations

Pool, Billiards and Bowling Alleys as a Phase of Commercialized Amusements in Toledo, Ohio.

REV. JOHN J. PHELAN, M. A. Little Book Press, Toledo, Ohio. Social Services Series 1, March, 1919. 195 pp. $1.50

The author here presents a considerable amount of specific, concrete information as the result of his extensive survey of the pool-rooms and bowling-alleys of Toledo and their effects upon boys and young men. A new ordinance for the control of pool-rooms is outlined, and a number of constructive measures are suggested for the improvement of the social life of Toledo. Students of social problems will find the volume helpful as a study in methods of collecting social data. For the benefit of such students the author has provided a series of thought-provoking exercises at the end of each section.

Business Law.

THOMAS CONYNGTON, with the collaboration of ELIZABETH A. SMART. The Ronald Press Company, New York. 1919. Third Printing. xxi + 535 pp. $4.00

Town Planning Institute, Papers and Discussions.

Vol. iv, 1917-18.

This always interesting volume of the proceedings of the British town planners contains five valuable papers and discussions: Town Planning in Canada, by Thomas Adams: The Regional Survey Preparatory to Town Planning, by Prof. Fleure: The Development of British Watering Places After the War, by J. W. Cockrill: Reconstruction With Particular Reference to Housing, by Lieut. R. L. Reiss: Arterial Roads in the Birmingham Town Planning Schemes, by Henry Edward Stilgoe. (Apply to Alfred R. Potter, Secretary, Town Planning Institute, 4 Arundel Street, Strand, London, W. C.)

City Budget Facts.

Issued, 1919, by the Bureau of Municipal Research, 813-820 Bank of Hamilton Building, Toronto, Ont. 30 pp., illustrated by charts.

Chemical and Biological Survey of the Waters of Illinois.

Bulletin No. 15, issued by the State Water Survey Division of the Department of Registration and Education, State of Illinois, and submitted on February 11, 1919, contains abstracts of detailed investigations made during 1917, arranged alphabetically by towns; articles entitled "Significance of Lactose-Fermenting Organisms in Water" and "Air Diffusion in the Activated-Sludge Process of Sewage Treatment"; and the results of an experimental study by D. F. McFarland of the extraction of grease from dried activated sludge. 133 pp., including index. (Write to Edward Bartow, Chief, Division of State Water Survey, Urbana, Ill.)

Boiler Water Treatment.

This bulletin shows clearly how a notable reduction in factory heat losses may be effected thru the substitution of softened for hard boiler water and sets forth the advantages and disadvantages of various processes for softening the water. 8 pp. 1919. (Write the Bureau of Mines, Department of the Interior, Washington, D. C., for Technical Paper 218.)

A Memorial University.

One of the most inspiring articles on the subject of soldiers' memorials that have come to our notice is entitled "A University for the Kansas City Memorial to Our Soldiers," and is the reprint of an address recently given by William B. Henderson. Opposing a suggestion that one feature of the Kansas City memorial be forty-eight pillars, "the pillars of the Republic," built so strong as to be still standing when our Republic has crumbled to pieces, the author says, "I would rather build the Republic so that when all the pyramids, triumphal arches, monuments and towers on earth have crumbled to dust, the Republic will have endured, and continue to be an agency of service and an inspiration to the world." What memorial could possibly better serve this high purpose than a great university dedicated to the task of building a great and noble people? 19 pp. 1919. (Apply to William B. Henderson, Kansas City, Mo.)

Proposed Tax Increases for Chicago.

A statement of the present financial condition of the Chicago city government and of the proposed increases in tax rates for the city's general corporate purposes, for education and for general corporate purposes in Cook County, prepared by the Chicago Bureau of Public Efficiency, 315 Plymouth Court. 17 pp. Issued June, 1919.

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Honor Roll or Bronze Memorial Tablet

recording permanently the names of the boys who fought for the Liberty of the World. Our plan gives full details. Write today for plan and design selection No. 29.

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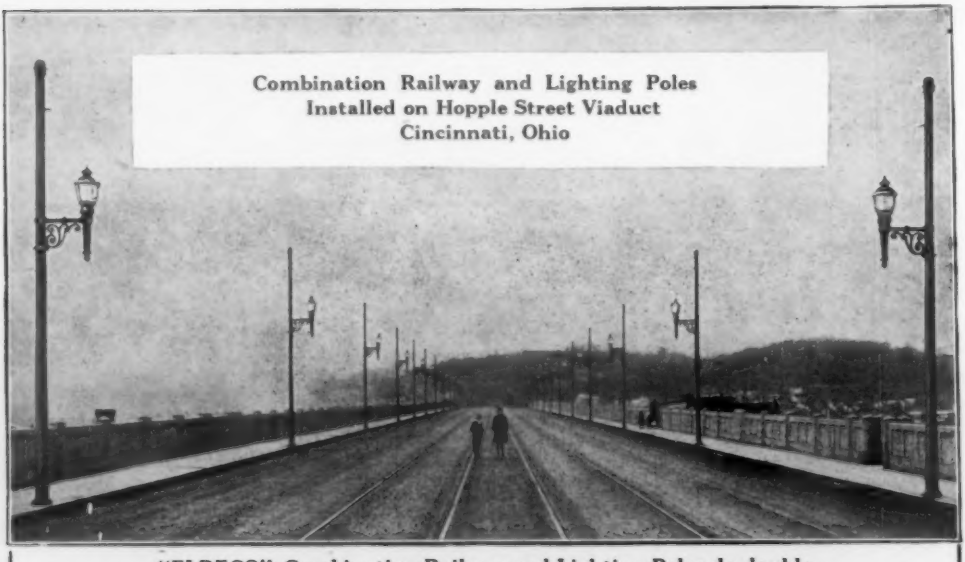


Combination Railway and Lighting Poles Installed on Hopple Street Viaduct Cincinnati, Ohio

"ELRECO" Combination Railway and Lighting Poles do double duty—support trolley wires and ornamental lighting fixtures.

NO LAMP STANDARDS REQUIRED.

Write for Illustrated Book on Modern Street Lighting.

ELECTRIC RAILWAY EQUIPMENT COMPANY

New York **CINCINNATI, OHIO** **30 Church St.**

The Public Markets in the State of Washington.

This study of the experiences of a number of cities in the state of Washington should prove of value to other cities which contemplate installing municipal markets, as the investigator has succeeded in giving in his report a very clear exposition of both the limitations and the advantages of public markets, and is well prepared to give expert advice based upon his thoro study of this timely subject. 43 pp. (Published in October, 1918, by the Office of Farm Markets, Pullman, Wash.)

A Survey of the Poor and Alms Department and Almshouse of Newark, N. J.

At the behest of the Mayor and Board of Commissioners of Newark, N. J., a survey of the Newark Poor and Alms Department, of other social agencies in their relationships to the Department, and of the Almshouse, has recently been completed by the Russell Sage Foundation, thru its Department of Surveys and Exhibits. A very limited number of copies of this report are available for distribution. 71 pp. (Issued April, 1919, by the Department of Surveys and Exhibits, Russell Sage Foundation, 130 East 22d Street, New York City.)

Junk Dealing and Juvenile Delinquency.

A 60-page pamphlet issued by the Juvenile Protective Association of Chicago gives the results of its investigations into the relationship existing between junk dealing and juvenile delinquency. The report includes local reports, a summary of reports from other cities, a study of one hundred delinquent boys, the results of first-hand observations of junk dealers, and a number of recommendations. 1919. Price, 25 cents. (Copies can be obtained from the Juvenile Protective Association, 816 South Halsted Street, Chicago, Ill.)

Robert W. Speer—A City Builder.

This memorial book tells the story of the life and work of Robert W. Speer, three times mayor of Denver, who died in May, 1918. The story of his lifetime of service for the betterment of his city and state is illustrated by a number of large photographs, some of them in color, showing many concrete results of his service as expressed in public works of beauty and utility. 1919. Quarto. Bound in leather. 79 pages. 42 illustrations. Price, $3.00. (Send request for copy of this book to E. C. MacMechen, Editor, Room 110, City Hall, Denver, Colo.)

A Tentative Program for Community Centers.

The Committee on Community Centers of the Chicago Board of Education has issued a 12-page pamphlet outlining a plan for school extension work to include Americanization, educational exhibits, films and lantern slides, community music, speakers' bureaus, and a more effective combination of evening school and community center activities. The Committee's report also discusses the advisability of hiring extra paid workers for this service and of coördinating existing organizations with the schoolhouse as their common home. Issued January, 1919. (Apply to Edward L. Burchard, Acting Secretary of the Advisory Commission on Community Centers, Board of Education, Chicago, Ill.)

A Manual for Home Teachers.

A pamphlet relating the experiences of "pioneer" home teachers in California and containing plans and instructions for prospective home teachers in matters pertaining to instruction in sanitation, the English language, household duties, the rights and duties of citizenship; to the furtherance of better school attendance in both day and night schools, home gardens and home preserving of fruits and vegetables; and to all other phases of home service. 1919. 48 pp. Issued by the State Commission of Immigration and Housing of California. (Apply to Paul Scharrenberg, Secretary, Underwood Building, 525 Market Street, San Francisco, Cal.)

First Aid to New Voters.

Prepared in 1918 by Louise Burchard to meet the needs of the newly enfranchised women voters of New York State. The topics treated are: citizenship; the town, village, city, county, state and national governments; treatment of criminals; suffrage and elections; methods of law-making; taxation; the school system; "Citizens of the World"; the territories; and city problems. 63 pp. (Apply to Louise Burchard, Schenectady High School, Schenectady, N. Y.)

A Garden of American Motion Pictures.

A list selected and offered by The National Committee for Better Films, issued April, 1919. 24 pp. Price, 25 cents. (Procurable from the Social Service Department of The National Board of Review of Motion Pictures, 70 Fifth Avenue, New York.)

A School Building Program for Cities.

Dr. N. L. Engelhardt, the author of this practical volume, emphasizes the necessity and the ultimate economy of planning school building programs which will meet the needs of the community in the future as well as in the present. The development of such a program is considered as involving three distinct problems: the measurement of the population, the measurement of the school plant, and the measurement of the ability of the community to pay for needed extensions to its school plant. As the writer's discussion of each of these problems is based on his recent participation in six extensive school surveys, his conclusions should be of much practical value to all who are facing the task of laying out a school building program. 130 pp. 1918. (Published by Teachers College, Columbia University, New York City.)

The Book of New Orleans and the Industrial South.

That the city of New Orleans is wide-awake and progressive is evidenced by this book which has been issued by the city government in its campaign to advertise New Orlean's industrial facilities. Some of the city's advantages for trade and home-building which are described and attractively illustrated in this volume are its strategic location, its port facilities, the new inner harbor or industrial canal, the natural resources of the near-by territory, the financial resources and banks of New Orleans, its big ship-building industry, adequate and low-priced housing facilities, enterprising commercial organizations, healthful climate, schools, churches, clubs and facilities for recreation. 64 pp. Quarto. 1919.

Waste Reclamation.

"Don't Waste—Save It" is the slogan adopted by the Waste-Reclamation Service, Department of Commerce, Washington, D. C., in its recently issued bulletin describing its work. The booklet tells how to organize a local waste-reclamation council, what the duties of such a council are and what coöperation it may receive from the national Service, and emphasizes the necessity and value of this work. 20 pp. 1919.

Disposal of Waste Paper in Government Service.

Letter from the Secretary of Commerce to the House of Representatives transmitting report on the handling and disposal of waste paper in government service, together with certain comments thereon from the office of the public printer and the reply of the Department of Commerce. 20 pp. 1919. (Apply to H. L. Baldensperger, Chief, Waste Reclamation Service, Department of Commerce, Washington, D. C.)

Modern Industrial Housing.

The writer states that he "has herein undertaken to set forth clearly and concisely the salient problems confronting industrial employers, housing corporations and communities, with the idea of assisting those who contemplate the erection of industrial houses in arriving at a practical method of procedure." Photographs and architects' plans show some interesting and attractive developments at Marcus Hook and South Langhorne, Pa. Part II of the pamphlet is devoted to a description, with illustrative drawings, of the concrete stud and cement stucco house, which is especially recommended by the author as a solution of the workingman's house problem. 24 pp. 1918. (Published by Ballinger & Perrot, Architects and Engineers, Wesley Building, Philadelphia, Pa.)

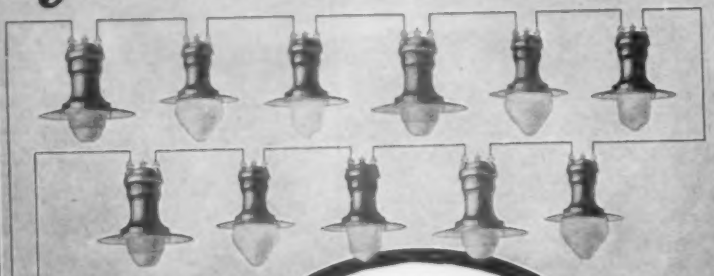
Aliens' Text Book on Citizenship.

Herbert M. Beck, Chief of Naturalization, Camden County Courts, Camden, N. J., has prepared an attractive little book of 100 pages which provides the alien with the knowledge necessary to pass the examinations for naturalization. The book includes a brief but inspiring introduction by Mr. Beck, the United States laws relating to naturalization expressed in simple, easily understood language, the Declaration of Independence, the Constitution, the two national anthems, and a list of questions and answers which have been found helpful during many years' experience in naturalization work. 1919. (Apply for copies to Mr. Beck, address above.)

Report on the Problem of Refuse Collection in Rochester, N. Y.

In this report are presented the results of a detailed analysis of the methods of refuse collection at present employed in Rochester, together with comments on these methods and suggestions for organizing for a better and more economical service. 103 pp., and a large number of photographs and tables, maps and diagrams. (Issued March, 1919, by the Rochester Bureau of Municipal Research, Inc.)

Reduce Lamp Renewals By Close Current Regulation



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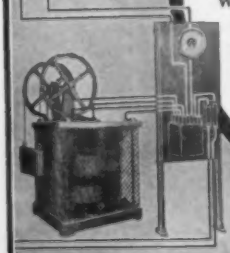
Regulators

give such accurate regulation that the lamp filament is afforded ample protection at all times against excessive current and surges on the series circuit. This protection means increased lamp life and lower operating costs.

Westinghouse Type CF Luxsolite Fixtures are designed for use with the highly efficient gas-filled Mazda Lamp. They are attractive and durable. With the various types of diffusing and refracting glassware, they satisfy the most exacting requirements of efficient Street Lighting.



W
WESTINGHOUSE ELECTRIC

Westinghouse

Lessons from Housing Developments of the U. S. Housing Corporation.

"Two sorts of lessons are to be derived from the Government's emergency operations in the housing field," says Frederick Law Olmsted, Manager of the Town Planning Division of the U. S. Housing Corporation, in this article, which has been reprinted from the *Monthly Labor Review*. Mr. Olmsted proceeds to show the benefits to be gained by the individual home builder in the study of the successes and mistakes made in these large-scale hurried experiments, and shows also that there is a deeper lesson and problem involved in the study of the social and economic conditions which have caused and are still causing the housing shortage. May, 1919. 12 pp. (Apply to the U. S. Department of Labor, Washington, D. C.)

Reconstruction and Social Advance.

A new program of community service, as worked out in Chester, Pa. Reprinted from *The Survey* by Community Service, Inc., 1 Madison Ave., New York. Chester's activities included Americanization work, community singing, community centers in the schools, colored organization, Italian organization, community clubs and a training class for playleaders. 1919. 12 pp.

The Working Conditions Service of the U. S. Department of Labor.

A recently issued pamphlet entitled "Treatment of Industrial Problems by Constructive Methods" tells how the Service is prepared to attack these problems, thru information service, consulting service, standardization and research work. A glance at the chart which will be sent on request with the pamphlet will show the employer, superintendent, employment manager, personnel worker or any other interested in better working conditions and greater efficiency of workers just how the Working Conditions Service is prepared to help him in solving his individual problems. (Copies can be secured by writing to the Director General, Working Conditions Service, Department of Labor, Washington, D. C.)

Index to Bulletins of Highway Industries Association.

The Highway Industries Association, Washington, D. C., has recently issued a 4-page typewritten index of the bulletins issued by the Association up to June 1, 1919, and announces that a semi-annual index will hereafter be issued. Copies can be obtained upon application.

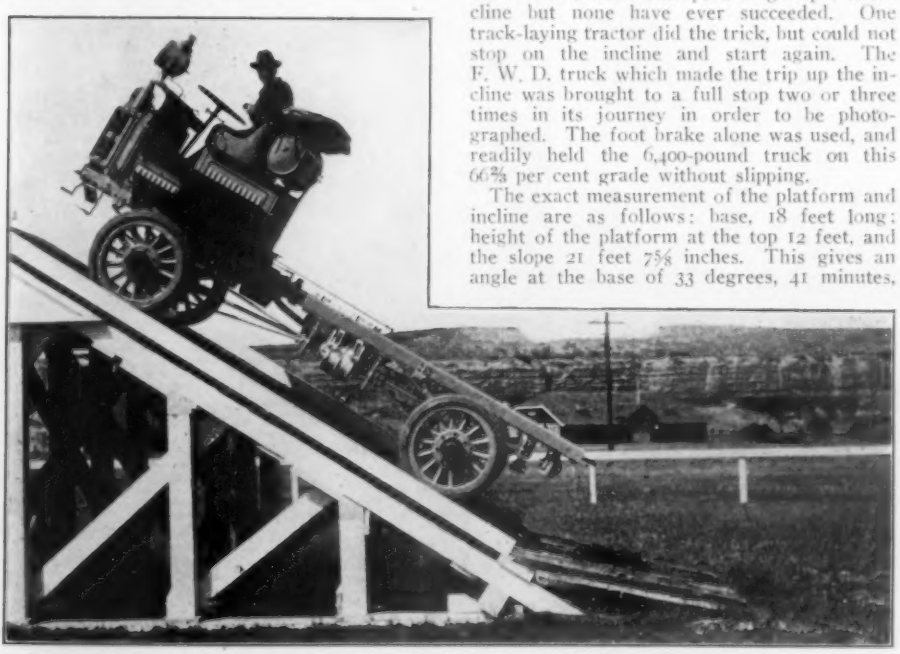
Methods, Materials and Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Climbing a 66⅔ Per Cent Grade

A remarkable demonstration of the pulling powers of an F. W. D. truck was given not long ago by H. A. Lewis, of Billings, Mont., when he drove one of these trucks up the famous Billings incline. Many rear wheel drive trucks have attempted to go up this incline but none have ever succeeded. One track-laying tractor did the trick, but could not stop on the incline and start again. The F. W. D. truck which made the trip up the incline was brought to a full stop two or three times in its journey in order to be photographed. The foot brake alone was used, and readily held the 6,400-pound truck on this 66⅔ per cent grade without slipping.

The exact measurement of the platform and incline are as follows: base, 18 feet long; height of the platform at the top 12 feet, and the slope 21 feet 7⅝ inches. This gives an angle at the base of 33 degrees, 41 minutes,



A 3½-TON TRUCK CLIMBING THE BILLINGS 66⅔ PER CENT GRADE

When your tire hits a brickbat

—as you are spinning along at a good speed, it gets a blow that would smash a steel bar.

How does a tire stand it? Because a pneumatic tire yields to the impact of the blow, absorbs it throughout its casing, and springs back to its original shape.

Obviously the tire that can absorb the greatest shock with the *least jolt* and *least damage* is the easiest riding and most durable tire.

The Silvertown Cord Tire has been proved by *actual hammer test* able to withstand double the blow that ordinary tires can before it shows injury.

The reason is Silvertown's specially wrapped cable-cord body, which absorbs extreme shock, distributing it along the full length of its thewlike cable cord, much as a coil spring takes up the smash of a blow.

Therefore, it is scientific logic that Silvertown's unique structure does meet the jolt and jar of rough travel with smoother riding ease, and lives to deliver greater mileage.

In the beginning know Silvertown by the *Twin-Red-Diamonds* on the sidewall; and you will remember them in the end by their perfect service.

Buy Goodrich Tires from a Dealer.

ADJUSTMENT

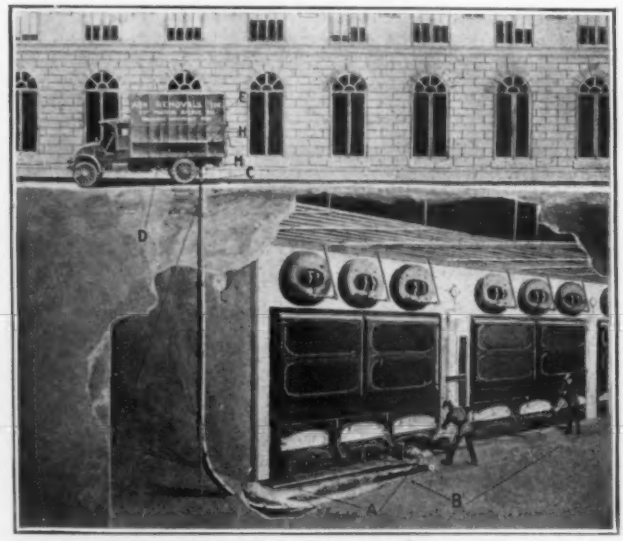
Fabrics 6,000 miles — Cords 8,000 miles

GOODRICH
TIRES
"BEST IN THE LONG RUN"

which, when translated into percentage of grade, gives 66⅔ per cent. The photograph on page 191 shows the truck brought to a full stop part way up the grade.

Motorized Pneumatic Ash Conveyors

Ash Removals, Inc., 347 Madison Ave., New York City, maintains a service which the company claims will remove 500-800 pounds of ash per minute from a boiler room and eliminate the cost and trouble of dust, noise, ash cans, elevators and elevator maintenance, and ash-removing labor. Included in the apparatus used are a concrete pit, with removable covers, into which the ashes are raked; an 8-inch conveyor line extending from beneath the concrete pit and terminating under the sidewalk at the curb; and a conveyor truck, consisting of a 6-ton chassis equipped with a high-pressure blower driven by truck motor, a washing device for eliminating all dust from the air before exhausting into the atmosphere, a silencer and a steel bin or separator placed above the machinery and forming the body of the truck. The system operates as follows: Ashes are raked from boilers into the concrete pit by the fireman. Upon the arrival of the conveyor truck, the operator makes the necessary connection to the conveyor line thru the sidewalk at the curb, and starts the machinery on the conveyor truck. The assistant operator enters the boiler room for the purpose of feeding the line. When all ashes have been removed, the operator disconnects the conveyor truck at curb and discharges the ashes from the bin on the conveyor truck by gravity thru gates into a dump truck. The dump truck then proceeds to the point of disposal, allowing the conveyor truck to go to the next building to repeat the process.



SECTIONAL VIEW SHOWING OPERATION OF ASH REMOVALS SYSTEM

Children Delight in the Giant Stride

One of the most popular pieces of apparatus in any public playground is the giant stride. This "merry-go-round" device is one of a great variety of types of playground equipment

A POPULAR PLAYGROUND SPORT

sold by the American-La France Fire Engine Company, Inc., of Elmira, N. Y. The model shown herewith will carry eight riders, is substantially made and practically indestructible. The pivot head is of malleable iron and can be furnished for either steel or wood post. The handles consist of three ladder rungs, of wood or steel. The steel post consists of 4-inch pipe 16 feet long, no threads. The company will send on request illustrated literature describing other pieces of playground apparatus that will delight the "kiddies," such as coaster slides, seesaws, horizontal ladders and swings, substantially made in many different designs and sizes.

J. L. Ludlow Released from War Service

After two years' war service with the United States Shipping Board and United States Public Health Service, J. L. Ludlow has now resumed private practice as consulting engineer and general manager of The Ludlow Engineers, Winston-Salem, N. C., a well-known firm whose varied activities include: construction of water-works, electric light and power plants, high-

Drink Nature's Own Beverage!

There is nothing more refreshing when one is fatigued than a drink of PURE, COLD WATER.

Many municipalities have appreciated the importance of installing **Sanitary Drinking Fountains** in Public Buildings, Playgrounds and Parks. Any Drinking Fountain other than a SANITARY one is a menace to the Public Health.

Ask us to prove that **PURO LIBERTY FOUNTAIN IS SANITARY.**

The PURO LIBERTY DRINKING FOUNTAIN

THE PURO LIBERTY IS ABSOLUTELY SAFE! The stream of water cannot possibly be contaminated. Lips or fingers cannot touch the jet, neither can any water fall back into the mouthpiece.

Safeguard the health in YOUR CITY by installing PURO LIBERTY DRINKING FOUNTAINS IN ALL PUBLIC PLACES.

Write us NOW for descriptive matter and prices.

Puro Sanitary Drinking Fountain Co.
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ONE MAN CAN OPERATE THIS SANITARY MOTOR-DRIVEN STREET SWEEPER

ways and concrete bridges, drainage systems, wharves and terminals; industrial and municipal sanitation, and industrial village and city planning.

Sanitary Motor Sweeper

An up-to-date, noiseless, sanitary motor sweeper that sprinkles, sweeps and collects the street dirt all in one operation is described in a recent booklet issued by the Austin Manufacturing Company of Chicago. The equipment includes a large water tank, capacity 150 gallons, and a spraying equipment sufficiently in front of the broom to give the water enough time to penetrate the dirt before sweeping. The Austin motor sweeper moistens the dirt, sweeps it upon a carrier, and conveys it to an ample receptacle without creating dust. When the receptacle is full, it carries the refuse to a dumping point. All this work is accomplished by one man, who needs no preliminary training other than driving a motor truck. It is claimed for this sweeper that it raises no dust, and so can be used to advantage in the daytime, and that it is so noiseless in action that it may be used in residence districts without the slightest disturbance, thus permitting 24-hour service.

A Municipal Exposition in the Grand Central Palace

With the signing of the Peace Treaty and the gradual adjustment of peace conditions to the world's big business, a new day has dawned for American industries, and one of the big factors in establishing a bigger world commerce for American industries is the Merchants and Manufacturers Exchange of New York. This new enterprise has taken over the Grand Central Palace for the purpose of turning it into a mammoth trade clearing-house. It will consist of eight or more permanent industrial expositions, one of which is to be the International Exposition of Municipal Equipment. It is planned to have this Exposition embrace all that is best and most up-to-date in equipment and utilities along every line of municipal activity. It is an initial opportunity to bring together manufacturer and buyer, and to put American municipal products before the world's buyers at a minimum overhead cost.

The Merchants and Manufacturers Exchange of New York is owned and controlled by the Nemours Trading Corporation, of which Alfred I. DuPont is President. This corporation has branches in all leading cities thruout the world, consisting of nineteen branch offices and 3,000 foreign selling agencies. Mr. DuPont, foreseeing the advantage to American business in making America the center of world commerce, conceived the idea of leasing Grand Central Palace as a great trade mart. The Merchants and Manufacturers Exchange will use eight to twelve floors for permanent industrial expositions, while the four lower floors will be used for short-term expositions of various sorts.

The assembling of the Municipal Exposition, which promises to be one of the most interesting in the Palace, will be in charge of Jeanne Carpenter as Director. Mrs. Carpenter, who is co-author of "Municipal Housecleaning," has had years of experience in municipal work. All communications should be addressed to the Director, International Municipal Exposition, room 421, 405 Lexington Ave., New York.

The Good Roads Machinery Company Opens Chicago Office

On and after July 1, 1919, The Good Roads Machinery Company will maintain a main selling office in Chicago, Ill., located in room 1203, Tower Building, Michigan Boulevard and Madison street. Since this company was first organized in 1898 it has maintained a large sales office at Fort Wayne, Ind. This office will be continued on a small scale for the present at least, but the main Western selling office will be located at Chicago. D. L. Philips,

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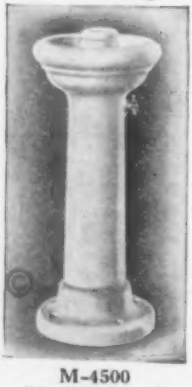
Lamp Posts

that light effectively and as ornamental as may be desired. Styles to meet every fund.

Man Holes

made right of the best materials available. A kind for every purpose.

Drinking Fountains



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(Madden's Patent)

that save in operating expense, meet every rigid sanitary law, look well and made to endure. Fewer loose parts mean less trouble and less expense. Styles for every location.

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that accomplishes the work of two or three good deputies and proves the work for you as you go along, is surely worth investigating.

City and County officials are equipping their offices with modern devices for the saving of time and energy.

Whether it is:—

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Or just the simple yet brain tiring multiplication, and divisions you will find that the Marchant will do your figuring for you and do it efficiently too.

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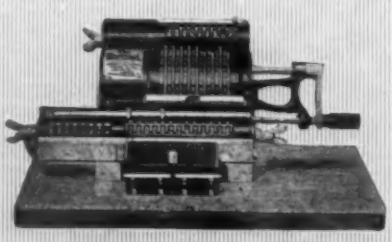

former manager of the Boston office, will be in charge of the new Chicago office.

The Road Around the Ashokan Reservoir

The front cover of this month's Town and County Edition of THE AMERICAN CITY shows part of the highway which surrounds the Ashokan Reservoir, one of the largest reservoirs supplying the population of New York City with water. When the city of New York purchased the large acreage required for the construction of the Ashokan Reservoir in the Catskill Mountains just west of Kingston, N. Y., it became necessary to replace a number of the state and county highways with a road that would entirely surround the new reservoir. This new road, 32 miles long, was constructed of Texaco asphaltic concrete, furnished by the Asphalt Sales Department of The Texas Company during the latter part of 1913 and early in 1914.

The road was built by the Board of Water Supply of New York City, and Professor A. H. Blanchard, of Columbia University, and George W. Tillson, Consulting Engineer for the Borough of Brooklyn, were the consulting engineers retained by the Board for the work. Because of the invigorating air, the beautiful mountain scenery, and the smooth highway, the road around the Ashokan Reservoir is much traveled by automobilists on pleasure trips. The Reservoir is one of the largest reserve water storage basins in the world and is considered one of the greatest feats of modern engineering.

Changes in Staff of Morris Knowles, Inc.

Morris Knowles, Inc., Engineers, of Pittsburgh, Pa., announce the completion of their work for the U. S. War Department as supervising engineers at Camp Meade, Md., and Camp McClellan, Ala.; the conclusion of the engagement of Mr. Morris Knowles as Chief Engineer of the Housing Department, the Emergency Fleet Corporation, U. S. Shipping Board; the return of Capt. Maurice R. Scharff after eighteen months of service with the Corps of Engineers in France; the addition to the staff of Mr. Charles M. Reppert, formerly in charge of the Division of Design in the Bureau of Engineering, Department of Public Works, Pittsburgh, and more recently Deputy Chief Engineer of the Housing Department, Emergency Fleet Corporation, U. S. Shipping Board; and the transfer to the Pittsburgh office of Mr. A. B. Hargis, formerly Assistant to the City Engineer, Birmingham, Ala., and latterly Deputy Chief Engineer with Morris Knowles, Inc., at Camp McClellan.

Eastern Paving Brick Manufacturers' Ass'n Opens New Offices

William C. Perkins, Chief Engineer, Eastern Paving Brick Manufacturers' Association, formerly with the Dunn Wire-Cut Lug Brick Company, Conneaut, Ohio, who a few months ago was made Chief Engineer of the above Association, announces that Association offices have been opened at 1019 Lincoln Building, City Hall Square, Philadelphia, Pa. The Association will be glad to furnish information at any time concerning the construction of brick pavements or roads.

Test Your Sand

If you are an architect or an engineer supervising concrete construction, have you any means of checking the quality of concrete that is going in, or are you leaving it wholly to chance? "Better be safe than sorry," is the advice of Kolesch & Co., 138 Fulton Street, New York, manufacturers of the Universal sand tester. This tester furnishes a quick, simple, easy and accurate method of checking up the quality of a sand, for use in concrete for walls, foundations, dams, bridges, roads, sidewalks, reservoirs or other concrete products. The apparatus consists of a graded series of standard mesh screens (Nos. 6, 10, 20, 35 and 65), in a watertight casing; a series of glass vials communicating with the screens; and means for holding and making a graphical record of tests. The Universal sand tester is also adapted for measuring the size and uniformity coefficient of filter bed sands.

Small Portable Sand Tester for Concrete Work

Prominent Municipal Engineers Become Associated in Private Practice

Cards have recently been issued announcing that Rudolph P. Miller, formerly Superintendent of Buildings for Manhattan, and George E. Strehan, formerly Assistant Engineer in the Bureau of Buildings, have become associated in the general practice of engineering at 112 West Forty-second Street, New York City. The announcement states that this new firm is qualified to design building construction, masonry, structural steel, reinforced concrete and foundations, to conduct soil examinations and tests of materials, to make inspections and surveys, and to arbitrate disputes. They are prepared to undertake the formulation or revision of building laws and work involving city planning.

Detecting the Size of a Water Leak

A very interesting 36-page booklet issued by the Pitometer Company, 55 Duane Street, New York City, gives a most excellent series of illustrations, descriptions and advice regarding the use of the Cole Pitometer system in waterworks surveys. Copies of this booklet may be secured by writing the Pitometer Company and asking for Bulletin No. 5.

Dayton Airless Tires

GUARANTEED 2½ YEARS

Made exclusively for Fire Department use.

Ride like Pneumatics
No Punctures
No Blowouts

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The Dayton Rubber Mfg. Co.
Dayton, Ohio

Bi-Lateral Fire Hose construction keeps the rubber from cracking or leaking. If you want the best fire hose at the lowest cost per year of service, send for our catalogue.

Bi-Lateral Fire Hose Co.

326 W. Madison Street Chicago, Ill.

A FACT—that in a 12-hour day, a truck equipped with 'NOBBY CORD' PNEUMATICS will transport 50 per cent. more merchandise than the same truck equipped with solids.

US — United States Rubber Company and Associated Companies

We specialize in Equipment for Motor Fire Apparatus

Complete Stock of General Fire Department Supplies

Sole Manufacturers of
Anderson-Hale Fire Station Door Openers

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